THE USE OF INSTRUCTIONAL MEDIA IN HIGHER EDUCATION IN HONG KONG AND ITS PROBLEM

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ABSTRACT

The present study is an investigation of the possible factors that may cause resistance to the use of modern instructional media at university level. By analysing these factors, it is hoped that in the future, certain priorities can be given in the development of educational media for higher education in Hong Kong. Although it is not the intention of this research to advertise the advantages of modern instructional media yet the writer does want to find out the degree of acceptance and use of these media by teachers of the two universities of Hong Kong, and possible improvement that can be made in their teaching process.

The study is based primarily on a survey research from a sample of teachers of lecturer and senior lecturer rank of the two universities. They represent eleven disciplines of the universities.

It has been found out that the internal factors, such as the mentality of the teachers, play a more important role than external factors such as the availability of hard-wares and soft-wares in determining the use of instructional media. The findings reveal the urgency of building up a general awareness among teachers of the importance and the relevance of these media to their teaching, and teaching them the knowledge of how to make appropriate soft-wares for these media and to promote a more favourable attitude among these teachers towards modern instructional media. This research stresses the importance of using instructional media for all subjects, be they in the field of science or humanities and all teaching staff should be encouraged to become familiar with modern instructional media and the technique of using them for better and more efficient teaching.

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To my parents who have been supporting and encouraging me in all respects, I really owe them a great deal.

Finally, I am personally responsible for errors which my be found in the manuscript.

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CHAPTER ONE

INTRODUCTION

GENERAL STATEMENT OF PROBLEM

In this modern world of high technology, with the ever expanding scope in knowledge and greater desire for learning, education has become more and more important and simultaneously more and more advanced. In the Western World, to cope with the desire and need, many educators at the University level have introduced instructional media[1] as a more efficient way in diffusing knowledge. Some, however, still have reservations against modern technologies and still maintain that personal contacts and the black board should remain as the main media of educational exchange[2].

In Hong Kong, through reports as issued by the Centre of Media Resources, University of Hong Kong[3] and the Instructional Development Service Unit, Chinese University of Hong Kong, the two Universities are compared very unfavourably with universities of Western World in the use of instructional media.

Definitely, there are many factors accounting for the resistance against instructional media[4], some of which Hong Kong shares with the

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[1] Weinstock Ruth, ed., Communication Technologies in Higher Education: 22 Profiles (Washington, D.C. Communication Press, Inc. 1977)

[2] Bruce R. Joyce, Media and Symbols: The Forms of Expression, Communication, and Education (Chicago, The National Society for the Study of Education, 1974)

[3] The Director's Reports, Centre For Media Resources, University of Hong Kong, 1976, 1977, 1978, 1979, 1980.

[4] Heinick, Robert, Technology and the Management of Instruction, monograph no. 4 (Association for Educational Communications and Technology, 1976)

Western World. Old habits, traditions are universally found in teachers. The belief that a university undergraduate needs very little teaching and is capable of independent studies is also shared by many teachers. In addition, the availability of funds to purchase the necessary equipment is also a great difficulty in implementing instructional media[5]. While Hong Kong has all these inherent factors at work, it also has unique problems. In spite of its cosmopolitan outlook, Hong Kong educational system is heavily influenced by the traditional pattern of education. While some teachers are foreigners or educated in the Western World, the pupil's population as a whole is Chinese.

Our main aim is to identify the factors accounting for the resistance against instructional media in higher education in Hong Kong and to attempt to understand them. This may provide grounds for policy makers in future development.

SIGNIFICANCE OF THE STUDY

The problem of how to correlate media in the art of teaching has long been with us. Research on media and technology in education covers a wide and diverse range of topics, settings and domains. Most of these researches emphasize on the effectiveness of chosen media, their comparisons, the psychological effects they have on learners and evaluation studies on the practice of education through improved media. A number of critics

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[5] Evans, Richard I. Resistance to Innovation in Higher Education. (California: Jossey-Bass, Inc., Pub. 1967).

have already shown the inadequacy in each of these approaches[6]. Consequently, we still know neither how to assess the psychological effects of these media nor how to adapt them to the purpose of education[7]. Disregarding these shortcomings these researches are based on the assumption that instructional media are universally accepted by educators. This has been found not true in the Western World[8]. Indeed, as it has been mentioned above, great resistance is also found in using instructional media in Hong Kong. Thus, before the latter is found to be useful or not to Hong Kong's higher education, it is obvious that the resistance factors should first be identified and understood. Hitherto, little research has systematically been devoted to the exploring of these factors, at least for the Hong Kong situation. The present study is a humble attempt to try to fill up this gap and contribute to knowledge in this respect.

PURPOSE OF THE STUDY

It is thus the intention of this thesis to identify, to evaluate the factors responsible for causing resistance in the use of instructional media in Hong Kong's higher education.

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[6] Salomon Gavrial and Clark Richard E., "Reexaming the Methodology of Research on Media and Technology in Education", Review of Education Research (Vol. 47, No. 1) pp. 99-121.

[7] Olson, David R. and Bruner, Jerome S., "Learning through Experience and Learning through Media" Media and Symbols: The Form of Expression, Communication and Education (Chicago: The National Society for the Study of Education, 1974) p. 125.

[8] Rogers, Everett M. and Shoemaker. Floyd F., Communication of Innovation (New York: The Free Press, 1971)

Some of the more obvious factors are the availability of equipment, the nature of the courses, personalities of teachers and the nature of the servicing or supporting teams. These factors are interrelated, and their significance varies from country to country.

The Hong Kong's situation shares common characteristics with the Western World, but also possesses peculiar features of its own. While instructional media may be a blessing to the Western World, it may not necessarily be suitable to Hong Kong because of its different economical and educational position.

Thus, this study concentrates on analysing the factors that hinders the introduction of instructional media into the university community.

Definition of Terms

Education - The aggregate of all the processes by means of which a person develops abilities, attitudes, and other forms of positive behavior of positive value in society in which he/she lives.

Media : all of the forms and channels used in the transmitted of information process.

Technology in Education - the application of technology to any of those processes involved in operating the institutions which house the educational enterprise.

Technology of Instruction - the specific process used to design a specific type of reliable and validated instructional product/instructional system component (e.g., the process used to develop programmed instructional materials is a technology of instruction.

CHAPTER TWO

THE BACKGROUND STUDY

The Road To Educational Technology[1]

Many reforms in education throughout the years have been made including educational process, teaching method, curriculum and concept[2].

In 1967, Sir Eric Ashby described the educational progress toward the modern system as the "Four Revolutions" of education[3]. The first occurred when society began to identify different roles, and the task of educating the young was partly shifted from parents to teachers and from home to schools. The second revolution was concerned with the adoption of the written word as an alternative to oral instruction. The third revolution came with the invention of printing. Men moved rapidly into the reading and writing world. As learning could be pursued privately and independently, knowledge began to spread more widely.

Now, with the rapid advancement of new technology and various electronic media, the fourth revolution in the pattern of

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[1] According to Monograph No.1 of the Technological Development Project of the National Education Association of the United States(1963), the definition given to "Technology" in education is: a systematic body of facts and principles related to a comprehensive, practical, and useful end. The term is not limited to industry or to engineering. The principles of effective teaching(pedagogy), for example, comprise a technology.

[2] Wiman, Raymond V. and Meirhenry, Wesley C.ed.,Educational Media: Theory into Practice,(Ohio, Charles E.Merril Publishing Company, Columbus,1969).

[3] The Fourth Revolution:Instructional Technology in Higher Education:A Report and Recommendations by The Carneigie Commission on Higher Education,(McGraw-Hill Book Company,1972).

education is born. The recent technological support to education has shared the educational responsibilities of lecturers and books.

Like printing, the invention of photographic technique, the introduction of motion pictures and the emergence of television and computer were not originally intended for educational purpose. However, with the ever expanding scope of knowledge and the desire for more knowledge by a greater number of people, the new technology or communication media turned out to be an ideal solution to fill these needs in terms of storage and mass transmission.

The beginning of technological support to education is of course not known. Print was generally considered as the first instructional medium of modern times[4]. Other photographic media and electronic media came into use in the nineteenth and twentieth centuries.

Electronic audio-visual media for education, however, came even much later. It was in the 1930 and in the most technologically-advanced country, the United States that concerns in audio-visual communication[5] for education were registered. Three major

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4 Wiman, Raymond V.and Meirhenry, Wesley C.ed.,Educational Media: Theory into Practice,(Ohio,Charles E.Merrill Publishing Company, Columbus,1969)pp23-26.

5 According to Monograph No.1 of the Technological Development Project of the National Education Association of the United States, the definition given to 'audio-visual communication'is: audio-visual communication is that branch of educational theory and practice concerned primarily with the design and use of messages which controls the learning process. It undertakes: a,the study of the unique and relative strengths and weakness of both pictorial and non-representational messages which may be employed in the learning process for any purpose; and b, the str structuring and systematizing of messages by men and instruments in an educational enviroment. These undertakings include the planning, production, selection, management and utilization of every method and medium of communication which can contribute to the development of the learner's full potential. Audio-visual communication is generally regarded by educationalists as the largest single segment of the growing technology of education.

organizations in this field, the Visual Instruction Association of America, the National Academy of Visual Instruction and the Department of Visual Instruction of National Education Association were set up in this year.

In 1932, the three groups merged together to form the Department of Visual Instruction of the National Education Association after the World War II, the National Education Association established the Department of Audio-Visual Instruction (DAVI) as a separate unit. Between 1948 and 1950, DAVI was reorganized and at the same time it publishes two journals, AV Communication Review (founded in 1953) and Audio-Visual Instruction (founded in 1956), both having become the professional journals in the field. The immediate and important concern of the newly merged Department in 1932 was a higher standard of professional education. Professional training in each of these three areas - utilization, production, and administration in visual and sensory technique - was recommended for teachers.[6]

In spite of this development, neither the educational community nor the general public in the United States was completely convinced of the efficacy of machine-oriented instruction in the sixties[7].

Indeed, Sir Eric Ashby (1967) commented that there had been an implication and tendency to use the fruits of technology merely to replicate on a larger and greater scale, the traditional institutions and practices. Instead of viewing

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[6] AV Communication Review, vol.17,no.1,Supplement 6,1963,pp.9-13.

[7] Godfrey, Eleanor P., The State of Audio Visual Technology, 1961-1966(Department of Audi ... al Instruction, National Education Association of the United Stste... 1967).

educational technology as an opportunity for reviewing educational practice, it had, too often, been conceived as a means of doing what had always been done, only more efficiently. It was the general opinion that "audio-visual" method only enhanced the lecturers' position as entertainers without making serious contribution to improve learning. In order to take full advantage of the new instructional aids available, changes in objectives and curricula are needed.[8]

In Britain, interest in the application of electronic media in teaching was initially shown in the Brymore Jones Committee Report on the use of aduio-visual aids in higher scientific education[9]. The committee suggested the setting up of a new national organization to direct a co-ordinated programme for the development of educational technology[10].

The Report was followed by the setting up of the National Council for Educational Technology[11]. In 1967, the British University Grant Committee designated nine universities as "high activity" centres. These were given special grant for building, equipment and staff expansion and were to handle sources of information,

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8 Hartly, James and Davies, Ivor K. ed., Contributions to an Educational Technology, Vol. 2 (London: Kogan Page Limited, 1978)

9 Audio-Visual Aids in Higher Scientific Education, Report of the Committee appointed by the University Grants Committee, the Department of Education and Science and the Scottish Education Department, H.M.S.O. 1965.

10 Ibid.

11 U.G.C. Annual Survey for the Academic Year 1970-71.

training, research and teaching materials with the intention if expanding the scope in knowledge. Substantial investments in relative aspects of educational technology where developments in curriculum call for new initiatives in method were made.

The term "educational technology" was formally adopted by the University Grant Committee in place of the "audio-visual aids" approach[12]. The concept of "educational technology" is gradually recognized as one based on a system approach to learning, calling for new resources in a variety of media[13].

This also implies the conversion of the craft culture to a technological culture. The difference in the "audio-visual aids" concept and the "educational technology" concept was clearly defined in the National Council for Educational Technology Report in 1970[14]:

> "There is more to this (educational technology) than a mere matter of terminology. The 'audio-visual aids' approach was based on the concept of 'enhancement' - the provision of aids and assistance to the teacher, lecturer or trainer in his traditional role, which remained unquestioned and unexamined. By the 'audio-visual aids' approach, the benefits could only be in terms of increased effectiveness, but at increased cost, since both equipment (hardware) and material (films, tapes, slides or teaching programmes, collectively described as 'software') have to be provided additionally ... The concept of a technology of education, and in particular, of the 'system approach', involves in essence, specifying the objectives of the educational process, selecting the most appropriate

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12 Central Arrangements for Promoting Educational Technology in the United Kingdom: Report of the Working Party appointed by the Secretary of State for Education and Science, London, 1972, Pg.31

13 Ibid.

14 Ibid.

and effective means for learning, testing their effectiveness and applying the results of that testing to the modification of learning system. In this way, there is the possibility of increasing both the effectiveness, in educational terms and the efficiency, in financial terms, of the educational process".

This changing concept or "development" concerning the application of audio-visual media to education is further analysed by Ivor K. Davies[15] when he decerns three different technologies in the literature in the field of education technology. They are:

Educational Technology One. This is essentially a "hardware" approach, stressing the importance of aids for teaching. This concept tends to dominate most of the classical writings on educational technology. It assumes that a technology of machines is intimately related to a technology of teaching, and that progress in education, is closely associated with the possession of the latest projector or computer. Technology is seen as a means of mechanising or automating the process of teaching with devices that transmit, amplify, distribute, record and stimuli materials, thus, widening the lecturers' impact on the potential audience. In other words, technology one is beneficial only with larger groups of students, increase the power of teaching, and reach beyond the boundaries of schools or classroom, without necessarily increasing the cost students have to bear, and sometimes even reducing it.

Educational Technology Two. This is essentially a "software"

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[15].Ivor K.Davies and James Hartley,ed., Contributions to an Educational Technology vol.2 (Kogan Page, London/Nichols Publishing company, 1978)pp.11-13.

approach, stressing the importance of aids for learning. This concept tends to dominate most of the current writings on educational technology and it emphasizes the importance of curriculum, course and instructional development. It maintains that a technology of message design such as goal setting, task analysis, motivational principles and evaluation, lies at the heart of efficient learning. Technology is seen as a means of providing the necessary know-how for renewing current, worthwhile learning experiences. Machine and mechanisation are viewed merely as instruments of presentation or transmission. A great deal of military and industrial trainings in Europe and North America over the last ten years are the products under Technology Two.

Educational Technology Three. This combines the "hardware" and "software" approaches. It applies system analysis concepts to education. Its emphases is less towards the individual and more towards the whole system within which an individual plays a role. Whilst Technology One is largely concerned with transmission-reception problems, and Technology Two with objectives of teaching or purposeful shaping of behaviour; Technology Three is an integrated approach of the whole process, based upon a combination of the machine and systems with management of learning. It is from this approach that many factors for or against the use of audio-visual aids, caused by the human elements are discovered.

The Hong Kong Situation

The beginning of "educational technology" in higher education in Hong Kong can be turned to the early seventies when

the University of Hong Kong seconded Mr. J.L. Reeves from England to plan for a central service unit for "investigation of teaching methods within the University and encourage and assist the instruction of any new method involving the use of modern communication media".

Proposals and outlines of development plans were drawn up and the Audio Visual Centre was formally established in July 1975[16].

Shortly after this, the Education Technology Unit of the Hong Kong Polytechnic was established[17] and in 1978, the Chinese University of Hong Kong also set up its Instructional Development Service Unit, with more or less the same interest in progressing towards the new "educational technology"[18].

Owing to the different traditions, academic climate, and nature of subjects offered by these three organizations, different emphasis in the course of development for these centres are found. They exhibit different paces of development and progress in assimilating the new devices in actual teaching practice.

Comparatively speaking, progress in the two Universities is much slower. At the Hong Kong University, senior staffing remains three throughout the establishment of the Centre For Media Resources. Requests for services are still not enthusiatic[19]. Similar situation was found at the Chinese University[20]. To most

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16 University Calendar, University of Hong Kong, 1976.

17 Hong Kong Polytechnic, Caldendar 1976.

18 University Calendar, The Chinese University of Hong Kong, 1978.

19 Director's Report, Centre For Media Resources, University of Hong Kong, 1980.

20 Announcement in the Unit's Newsletters, 1982.

teaching staffs, the services of Instructional Development Service Unit is still not too pupular.

Recent researches in the West have listed successful examples of instructional technology in Higher Education[21], although resistance against its application also exists. The question why Hong Kong is not one of these examples cannot be answered in simple terms. Resistance factors might be similar to those as found in the West, but Hong Kong is a unique city, being the meeting point of eastern and western cultures. In order to understand the Hong Kong's situation, the resistance factors will be analysed in a later chapter. Meanwhile, after providing a general background of the historial development of educational technology, it is relevant to describe theories concerning its application.

Learning, Communication And Technology Of Instruction: Basic Theories Contributing To Educational Technology

As stated in the National Council for Educational Technology[22], the concept of educational technology offers great potential advantages. But these advantages can easily be lost through lack of co-ordinated development. Indeed, it is always an important aim in educational technology to promote an

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21 Hortie, John A., Successful Examples of Instructional Technology in Higher Education, (Kansas State University, 1981)

22 Central Arrangements for Promoting Educational Technology in the United Kingdom: Report of the Working Party appointed by the Secretary of State for Education and Science, London, 1972, Pg.31

educationally constructive interaction between the new facilities and other elements in educational theory and practice.

Since the present growing importance of educational technology stems largely from the discovery of new technical aids and of new knowledge about learning and about the process of communication, its fundamental field of study is derived from multi-disciplinary approaches to the basic question of learning science. Education technology involves not simply the use of the new equipment and technique but also their adoption and co-ordination to serve new patterns and new systems of learning. (Basically, a shift from a predominantly intuitive attitude to teaching and learning towards a systematic analytical approach.)

However, the learning and communication theories remain throughout the basis for more effective utilization of audio-visual technique to instruction.

In fact, the communication and the learning theories are closely related. Robert Gagne points out that education, when looked upon in a total sense, is a process of imparting new and increasing complex capabilities to students. In this sense, education is itself a process of communication.[23]

The typical model of school instruction includes a teacher standing at the front of a room with a group of students and conducting various kinds of verbal communication with them.

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23 Gagne, Robert M. Principles of Instructional Design (New York: Holt, Rinchart and Winston, 1979)

Whether this be in oral or in written form (chalkboard or print), instruction is simply a kind of direct and structured conversation. However, the student can also learn in many situations that do not involve conversation at all. He can learn from observing events, natural or contrived; he can learn from reading books, examining pictures, watching pictures that move or from their own self-generated mental operation .

In addition, E. Thorndike, writing in 1962[24], stressed the point that "Telling" is not "teaching". The purpose of the process of instruction is to bring about a change in the capabilities (knowledges, skills, attitudes, and other dispositions) of the human learner. In such a view, the kind of communication that forms a part of instruction must also be judged in relation to changes in the capabilities of students.

This idea was further elaborated by Gagne's seven categories of acquired capabilities and five types of learning. Gagne's seven categories of acquired capabilities as revealed by his book written in 1965 are the stimulus-response connections, discriminations, motor chains, verbal chains, concepts, rules and problem solving[25]. These categories of capabilities not only

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24 G.M. Joncich, Psychology and the Science of Education, Selected Writings of Edwards L. Thorndike. (New York: Teachers College, Columbia University, 1962.)

25 Ibid.

differ in indicating the variety of things an individual can do, they also differ in terms of the "conditions" required for their learning. The conditions for learning any single type of capability vary in respect to both the internal condition of the learner (the state of his nervous system, including memorial traces), and the external conditions affecting him.

The external conditions of learning may be said to embody the various kinds of communication offered to the learner during the period of instruction. For example, to learn a motor skill like batting a ball needs little verbal communication on "how to do it" but requires a great deal of practice and watching. On the other hand, the rules of a basketball game are most rapidly learned by verbal communication.

In 1974 Gagne and Briggs further distinguished five types of learning. They included the intellectual skills, the cognitive strategies, the verbal information, motor skill and attitudes. The eight categories listed earlier were all included under the intellectual skills. Media for instruction could be matched by taking the five types of learning into consideration.

Under this theory, the existence of audio-visual communication media is a definite help because the traditional oral or written form of verbal communication is only a limited form of medium for instruction. The existence of audio-visual communication media such as slides, films, photographs, which can

represent and provide a substitute to the real things, enormously extends the range of possibilities for learning.

Besides this, the effects of instruction may also be improved. Gagne and Briggs, in analysing the learning task, listed "nine events" of instruction. They were: gaining attention, informing the learner of objectives, stimulating recall of prequisite learned capabilities, presenting the material, providing guidance, electing the performance, providing feedback, assessing performance and enhancing retention and transfer. By deciding how and when to fit a given medium to a given learning task, the effects of instruction can be increased.

Another theory contributing to learning through media is Dale's Cone of Experience[25]. Dale visualized the level of abstraction of subject matters as a cone with the least abstract experience at the bottom. They are: direct purposeful experience; contrived experience; dramatized experience; demonstration; study trip; exhibits; education television; motion picture; still pictures; radio and recording; visual symbols; and verbal symbols. Beginning with the "Direct, purposeful experience" end, learning is "slow but sure". While approaching the opposite end first, learning is "fast but risky".

Under this theory, "pictures" is vital for the learning of concepts in the introductory portion of a course like science. However, once the required concepts are known, pictures are not needed in the presentation of principles.

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[25] E. Dale, Audio Visual Methods in Teaching (New York: The Dryden Press,1954)

If we put Gagne and Brigg's five major areas of learning, the eight basic types of human capabilities, and the nine events of instruction as well as the cone of experience suggested by Dale into consideration, the fact that instruction and learning can be extended to greater limits by using various media of communication is undeniable. Classroom experience can be much more enriched and the kinds of stimili required by the learning task can be best presented by careful selection of media.

Indeed, John A. Hortin of Kansas State University, in "Successful Examples of Instructional Technology in Higher Education" summed up six benefits of the modern Technology for Education.[27] They are:

1. Technology can make education more productive
2. Technology can make education more individual
3. Technology can give instruction a more scientific basis
4. Technology can make instruction more powerful
5. Technology can make learning more immediate
6. Technology can make access to education more equal

In addition, Hortin stresses that technology can make a student more involved in a subject, can store information until the student is ready to use it, can relay information over long distance, and can also give the student the opportunity to interact and respond to situations in many ways.

All these are but theories advocating the use of instructional media in given settings. Yet how do the teachers who are the actual users of these techniques react to the media? What are the problems

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[27] Hortie, John A., Successful Examples of Instructional Technology in Higher Education (Kansas State University, 1981)

the teachers see in practical application? These are focuses of recent researches. The present research, however, deals with a local issue, that is the Hong Kong scene and attempts to evaluate the factors which may be responsible for resistance to the use of instructional media.

Factors Considered As Hindrance To The Acceptance Of Instructional Media In Education

> "Historically there has been only minimal acceptance of technology and innovation in schools. Today there is still a great deal of teacher explanation, student listening, student doing assignments and reading from text books, and students writing examinations about the material presented to them. This is not to say that there has not been considerable emphasis at times on the use of media other than blackboard, chalk and textbooks, but these older materials remain dominant in the majority of classrooms."

The above statement was made by Doris K. Lidtke, in a paper presented at the National Conference on Technology and Education in 1981.

Dr. Andrew Molnar[28] cited in a 1975 National Science Board Report continues to say:

> "...that over half of all science and social studies and two-thirds of all mathematics classes use a single textbook and many teachers use no supplementary aids other than the chalkboard." 29

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28 Lidtke, Doris K. Securing Teacher Acceptance of Technology Paper presented at the National Conference on Technology and Education (Washington, D.C. 1981)

29 Ibid.

Similar cases are found in many educational institutions[30]. Since the new educational media are theoretically beneficial[31] to education both in extending the scope of learning and in improving the communication technique, the factors attributing to the inability of implementing and incorporating these media in the traditional educational pattern become important issues of many recent researches[32].

Vandenberghe Roland depicts four factors which determine the implementation and incorporation of innovation into education.

1. The nature of innovation
2. The characteristics of the school
3. The attitude and attribute of the teacher and
4. The particular strategies chosen for implementation

Of course, in the consideration of resistance factors the larger socio-political influences and the long-term government policies should also not be neglected.

Among these factors, special attention should be paid to the "teacher" element. This is particularly the case in educational institutes where society places high value on individual

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30 Godfrey, Eleanor P., The State of Audio Visual Technology, 1961-1966 (Department of Audio Visual Instruction, NEA of the United States, 1967)

31 Please refer to previous section.

32 Vandenberghe Roland, Recent Trends in the Research on Innovations in Education (Belgium 1981)

freedom[33]. Unless the teacher finds the new technology compatible with his beliefs and instructional philosophy, the adoption of these audio-visual media in instruction will be hindered. In this respect the nature of the innovation that matters is actually the value of the new media as perceived by the teacher.

The role of teachers as a critical element for the adoption of audio-visual media in educational technology is discussed by many internationally reputed educationalists. In 1972, the working party appointed by the Secretary of State for Education and Science, London, on the Central Arrangements for promoting Educational Technology in the United Kingdom viewed teachers as the essential intermediaries or catalysts between the available learning resources and the students.

Eleanor P. Godfrey sees the role of classroom teachers as a cause of resistance to educational technology in the form of "man-machine relationship" in the introduction of any new technology. This man-machine relationship can perhaps be more clearly seen in the graphic presentation by James Finn and Robert Heinick of the changes in the system of instruction before and after the introduction of the audio-visual system.

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[33] The universities chosen for the present research is one.

Therefore, one of the major concerns suggested by Henry T. Ingles[34] is directed to study how lecturers feel about the changes that are taking place under the reform in the areas in which they are experiencing. He points out that resistance to educational technology by classroom teachers has been a contributing factor to its lack of success in many countries. He argues that technology can only function in an effective manner when human element is prepared to use the technology in the most creative way, exploring its full potentials[35].

The comparison can be summarized as follows:-

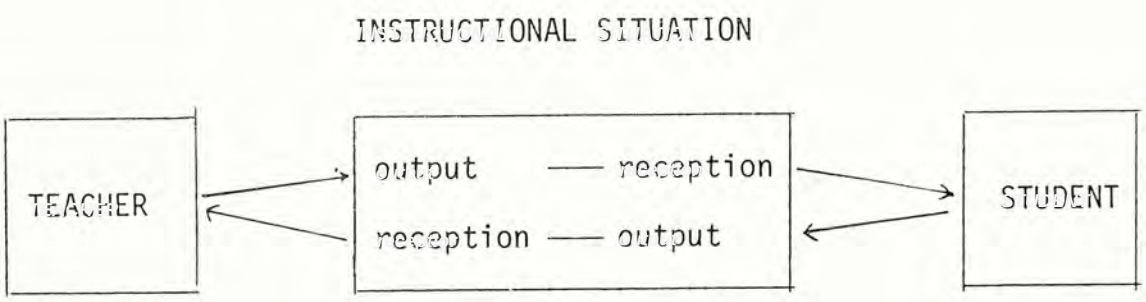

Fig. 1 TRADITIONAL EDUCATIONAL COMMUNICATION PROCESS

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34 Instructional Development for Individualized Learning in Higher Education (New Jessey: Educational Technology Pub. Inc., 1975)

35 Ibid.

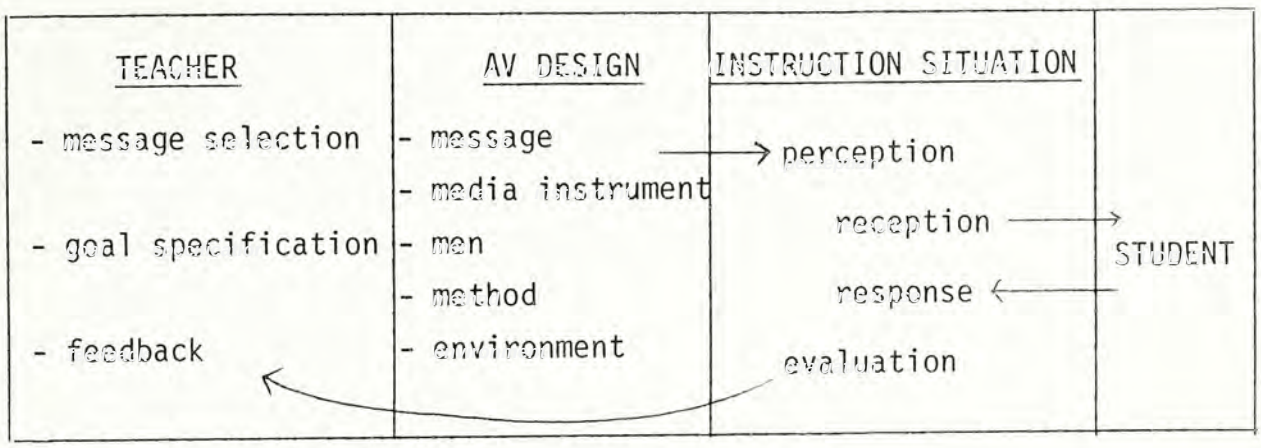

Fig. 2 AV relationship to educational communication process

From these two diagrams, it is seen that with the introduction of instructional media, the whole system of instruction becomes more complicated. Although the role of the teachers may be changed to a certain extent (instead of being the sole purveyor of knowledge, he may become the manager and designer of knowledge presentation), he remains the director or manager in the whole process of education. The decision of selection and application of various media for instruction largely depends upon the teacher.

From recent researches[36] factors accounting for teachers reluctance to accept technology are:

1. Little concrete evidence of the effectiveness of the use of these media
2. Teachers resistance to change
3. Lack of adequate hardware, software and courseware
4. Lack of training in the use of equipment
5. The need to change teaching style to use the technology and
6. The fact that extra time and preparation are required to use these technologies

Wilbur Schramm in 1977[37] expressed very similar view when he said that teacher's decision of using instructional media was a result of three factors: the task factor, the media factor and the cost factor.

Task factor means the relative load of work to be accomplished. Media factor is related to the availability of the media, and cost factor is the evaluation between different media in terms of cost and effect. These take into consideration of resources both in terms of money and manpower. These factors are of course interrelated as well.

Summing up, it has been found that factors affecting the teacher's decision in media use include: (1) the teacher's opinion concerning the medium which may be formed from his knowledge,

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36 Lidtke, Doris K. Securing Teacher Acceptance of Technology (Paper presented at the National Conference on Technology and Education (Washington, D.C. 1981)

37 Schramm, Wilbur, Little Media, Big Media: Tool and Technologies for Instruction (London: Sage Pub., 1977)

familiarity and skill in using the tool; (2) availability of the tool and (3) professional service provided in supporting the use of these media.

Another factor inhibiting the use of instructional media is related to an uneasy presumption that these equipment will replace the teacher. There is also the worry that the utilization of the machine will deliver a less personalized education for the students. In fact, all these worries are results from a lack of knowledge about the nature of these new technology; from an unawareness of the advantages and modes of using these machines in the classroom and from fright and anxieties caused by complications in operation.

Even for those teachers who are convinced that these machines are beneficial, there may remain some reluctance to use them more often. This may be due to anxieties caused by the following reasons: (1) difficulties in handling the equipment, (2) a feeling of loss of control of the teaching, learning situation, (3) inadequate hardware, software and technical support, (4) the spending of considerable time and effort for adequate preparation, and (5) to remain current in the field of these new techniques in order to use them in appropriate ways.

To simplify matter, six factors are drawn for the present survey research: the availability of hardware; the availability of software; human support;the opinion of the teachers' on the media as a channel to present subject matter, the teacher's knowledge

and the teacher's relevant skill.

These six factors, can further be grouped as external factors and internal factors. The first three, being more related to the external circumstances, is classified as external factors while the later three, being more related to the individual teachers, is classified as internal factors.

CHAPTER III

LITERATURE REVIEW

Books that are related to the writers' field of study on instructional media are abundant, particularly those on background studies. These general books can be broadly categorized into two types, those on theory and those providing empirical studies. The latter type gives facts and figures, while the former offers theoretical framework.

Instructional Technology - Descriptive Approach

Many books on education provide one or two chapters on the history of educational technology. From these works, one can trace the history of education as far back as to the time when word of mouth was the only tool for instruction. Educational Media Theory into Practice, by Raymond V. Wiman and Weslsy C. Meierhency offers good guidelines in this respect.[1] From ancient Greek society to the invention of print; from hand-written manuscripts to the first illustrated book, the way to instructional technique and concept is presented chronologically. The book provides a good introduction of famous educators in history such as Horace Mann and John Dewey. The gradual assimilation of modern aids such as motion picture into education is also traced.

While the former book is a general coverage of education and media, Contributions to an Educational Technology Volume 1 and 2, edited by

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[1] Raymond V. Wiman and Wesley C. Meierhenry, ed., Educational Media Theory into Practice (Ohio: Charles E. Merrill Pub. Company, 1969)

James Hartley and Ivor K. Davies), gives the perspective to the study of educational technology.[2] It includes a selection of papers, each representing a certain viewpoint on educational technology. The epilogue by David Hawkridge, traces the history of the development of educational technology from its earliest days. He divides the history of educational technology into three periods : the pre-history, that is, before 1954; the infancy, that is, from the time of B.F. Skinner's (1954) article, up to around 1966, where programmed instruction held the stage; and the adolescence period, from 1966 to present. Of course this is based mainly on the phenomena in the western world.

Ivor K. Davies, in the prologue to volume 2, reviews the "Four Revolutions" described by Eric Ashby. He further discerns three interpretations of educational 'technology' in literature in this field. Technology 1, being hardware in nature, Technology 2, being software in nature and Technology 3, being more of a system approach. Among other selected papers, it includes how the old learning concepts are refined by modern practice. The intervention of the ongoing system by the introduction of new method of instruction is also discussed. Part 1 of volume 2 in particular, gives a comprehensive picture of modern educational technology, both the concept and the theory.

Instructional Technology : Theoretical Approach

From a more descriptive nature to more theoretical basis, there is the Fourth Revolution, Instructional Technology in Higher Education, A Report and Recommandation (by The Carnegie Commission on Higher Education, 1972). The book examines influences that may be caused by

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[2] James Hartly and Ivor K. Davies, Contributions to an Educational Technology, Vol.2 (London: Kogan Page Limited, 1978)

the modern technology of communication on higher education and the steps to be taken to assure the benefits of instructional technology. It has been observed that the general faculty members tend to be resistant or apathetic in their attitude towards instructional technology. However, there are also signs that they, too, have much to gain if the new media are introduced to colleges and universities in the appropriate ways. Particular emphasize is given to the new efforts of making full advantages of technology in higher education.

Some observations and reports on actual practices are summarized in agenda form. One unique contribution of the report is its inclusion of a detailed description of the changing pattern in education, caused by the application of these modern technologies. Under the new pattern, the role of the library as a learning centre, the responsibilities of the highest level of academic administration in introducing and utilizing these media and the provision of relevant training, are also different. The cost, the goal and the impact on both the faculty and the student are also explored.

Another noteworthy work is Technology and the Management of Instruction by Robert Heinich in 1968. This is an appeal for a new theoretical structure in education. This monograph was originally prepared at the University of Southern California as a dissertation[3] under the chairmanship of the late James D. Finn. The author explores the possible changes in the personal relationships and original role for the members of the traditional educational pattern. He developes a new paradigm of Instructional Management[4] and distinguishes the difference between the

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[3] Originally prepared in 1967.

[4] Please refer to Heinich, Robert, Technology and the Management of Instruction, 1968, Figs. 7, 8, 10, 11.

"machine-independent past" and the "machine-dependent future". In the past, the main process of education communication was a face to face situation: the classroom lecturers took the initiatives. However, in the future, part of the classroom teaching may be substituted by "media teaching" and the human lecturer will play quite a different role behind the scene, planning the lecture, supervising and counselling the individual student and having more time for research work.

A Technologia Educational E A Solucao-Pare Que (What is Educational Technology?) by Henry T. Ingle provides a more indepth analysis of the essential elements in educational technology and the work has a direct influence on the present study.[5] Educational Technology, according to the author in a more recent conceived definition, goes beyond the aspects relating to an apparatus or machine. It implies an interrelated and systematic methods of designing and planning, conducting and evaluating, the total process of learning and teaching in terms of specific objectives, utilizing the best media, human and technical, to reach the learner most effectively. As 'technology' is neutral, the human element is seen as the most vital part in this system. Although the function of the lecturer as the sole purveyor of knowledge is changed, the lecturer, in the new situation, is still the chief director of knowledge transmission in choosing, designing and evaluating the material to be taught. From previous findings, resistance to educational technology by classroom lecturers has been a contributing factor to its lack of success in many countries. Therefore the author suggests that a major concern of researches should be devoted to see how lecturers feel about the ch[illegible]t a[illegible] place under the reform; their attitudes and behaviour [illegible]ld [illegible] a ma[illegible] clue to a

[5] Instructional Report, (Washington: The Int[illegible]at[illegible] Cen[illegible]on Instructional Instructional Technology Academy [illegible] Edu[illegible]on [illegible]elo[illegible]ent, 1977)

more successful use of technology in education.

These books and others such as in Communication Technology and Social Policy, edited by George Gerbner, Larry P. Gross and William H. Melody, Media Studies in Education, (UNESCO Reports and Papers on Mass Communication 1977) show the support and concerns of instructional media by educators as whole.[6]

Related Works Of Other Disciplines

Among the work outside the educational field contributing to the present study is Communication of Innovation by Everette Rogers and Shoemaker.[7] The book reviews many researches on the acceptance and resistance of various sorts of innovation under various circumstances. It is found that both societal (external) and personal (internal) factors have significant effects on a person's final decision in adoption or non-adoption of certain innovation. Rogers argues that individuals are more likely to adopt an innovation if they perceived in it the attributes of compatibility, relative advantage, triability, observability, and simplicity. These and many other generalizations in the book are supported by works in the educational field such as Adoption of Education Innovation by Richard P. Carlson, 1965.[8] Roger's work in many aspects acts as a guide-line to the present research frame work.

Literature on recent development and actual practice of instructional media are mostly confined to the western world. There

6 George Gerbner, Larry P. Gross and William H. Melody, ed., Communications Technology and Social Policy. (New York: John Willy and Sons, Inc., 1973)

7 Everette Rogers and Shoemaker, Communication of Innovation (New York: The Free Press,1971)

8 Richard P. Carlson, Adoption of Education Innovation, (Eugene, University of Oregon, Center for the Advance Study of Education Administration, 1965)

are short articles in magazines, reviewing the scenes in Asia once in a while. However, these efforts are superficial and dis-organized. One reason may be that Asian countries still are much behind the West in their educational development. They are beginning to turn to the experience of the Western World for guidance.

Some of the more comprehensive documents in respect to the actual practice and use of instructional media include the work by James D. Finn, Donald G. Perrin and Lee E. Campion, Studies in the Growth of Instruction for Instruction in the Public Schools, 1930-1960, A Basis for Take-Off. Five years later, Eleanor P. Godfrey presented The State of Audio Visual Technology : 1961-1966.[9] Although the target of these investigations was public schools of the primary and secondary level, they gave comprehensive statistics on the resources available and information on the extent to which these resources were used, factors that encouraged or inhibited use, and the prospects for the future. The change in concept and practice in regard to instructional media was also traced. Some factors of resistance media to be studied in the present thesis[10] owe their origins to these studies.

Another book of a more direct concern with higher education and instructional media is Communication Technologies in Higher Education, 22 profiles, prepared by the Educational Facilities Laboratories, and edited by Ruth Weinstock in 1977.[11] The universities under study are internationally represented. These documents show the actual uses of communication technology in specific colleges and universities. The reader

9 Eleaner P. Godfrey, The State of Audio Visual Technology, 1961-1966 (Department of Audio Visual Instruction, National Education Association of the United States, 1967)

10 Factors such as availability of hardware, software, knowledge of the media and skill in operating the media as well as software production are all factors of resistance to the media use reveal by Eleanor P. Godfrey's survey.

11 Ruth Weinstock, ed., Communication Technologies in Higher Education, 22 Profiles (Washington D.C.:Communications Press Inc., 1977)

can see how these media are used differently in each of these institutions and how each of them solves its own problems. The author analyses detailedly what is workable and what is not, and the reason underlying them. Again, these details provide possible bases for investigation for the present thesis.

Other publications on instructional media used in recent years in the Western World include the work by John Clarks,[12] and Richard Dyke[13] depict the advanced stage of development in the use of instructional media.

Literatures On Instructional Media

The next level of discussion is on the media themselves and the code they transmit in relation to instruction and learning. There are many publications advertising and instructing the use of each of these media for instruction by audio-visual companies[4]. More academic books in this aspect are those written by Edgar Dale, James Finn, Wittich and Schuller, James J. Thompson, Norman J. Atkinson and Joseph Flapper. A review of their work is given below:

Instructional Communication by James J. Thompson, 1969, examines communication "in all forms".[14] The characteristics and instructional capabilities of these media are discussed, stressing the type of communication they can facilitate and the nature of principles for their

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12 John Clarks, Learning Resources for an Instruction of Higher Education: A Feasibility Study. (Dundess College of Education Case Study, 1978)

13 Richard Dyke, Audio Visual Centres in Institutions of Higher Education in Europe. (Warwick: University of Warwick and UNESCO, 1979)

Such as the Kodak (Far East) Limited.

14 James J. Thompson, Instructional Communication. (London: Litton Educational Publishing, Inc., 1969)

use. The part of the book appreciated most by the writer is its ability to correlate the media with the whole system of education. The part on relationship between the media specialist and the lecturer implies the possible change in the whole educational pattern.

Audio-Visual Methods in Teaching edited by Edgar Dale, 1959, is considered as one of the poineer works in the field of educational technology. The book, again, is divided into three sections, the theory, the material and the application. It is interesting to compare these works with more recent publications such as Modern Teaching Aids by Norman Alkinson and John N. Alkinson. From Edgar Dale (1959), to Wittich and Schuller (1967), to Atkinsons (1975), we are able to trace the rapid progress in educational field in respect to technology. We learn from the latter book that people know more about the media and its applications the medium itself is much modified, so as to enable smaller-sized, more easily operated and lower cost production. Other similar work is Audio-Visual Process in Education selected readings from AV Communication Review (1971),[15] others are listed in the bibliography section in this thesis.

Although much is said about when to use and how to use these media in instruction, the writer quite agrees with David R. Olson[16] that the media could only be examined through the type of symbol system utilized by these media. The psychological and educational consequences of the media cannot be understood outside the nature of the symbol system they permit or ulitize. It is with this concept in mind that literature in this aspect is examined.

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15 Audio Visual Process in Education: Selected Readings from A.V. Communication Review. (New York: Johnson Reprint Corporation, 1971)

16 Olson, David R., Media and Symbols: The Forms of Expression, Communication and Education (Chicago: University of Chicago Press, 1974)

Generally speaking, the symbolic code transmitted by the various media selected for this survey can be categorized as follows:

Symbolic Code Transmitted by Various Media

Instructional Media Type	Audio	Visual		
	Analogue[5]	Iconic[6]		Digital[7]
		Still	Motion	
Blackboard		X		X
White board		X		X
Overhead Projector		X	X	X
Slide		X		X
Slide Tape Synchronized	X	X		X
Film: 16mm	X		X	
Film: Super 8	X		X	
Opaque Projector		X		
Video Tape	X		X	X
TV Programme	X		X	X
(Teacher)	X			

Survey Researches

After all these background studies, the writer reviews some survey researches done on the application of instructional media and the problems which come into being.

Empirical research and experiments on the effect of various media are also abundent. Joseph T. Klapper in 1949 studies the comparative effectiveness of the various media as instruments of informal pedagogy and of persuasion. The investigations were conducted under laboratory condition. The effectiveness of various media is indicated by the degree of rentention of material, change in attitude and the like. Print media, audio-visual and face-to-face form of communication were tested. Although laboratory experiments, which, due to their rigid conditions of control, differ markedly from social situation, the findings do contribute to the understanding of the effects of the symbol system on these media to a certain extent. For example, the reader is able to control the exposure of the print media, while screen elicits a higher degree of recall. However, the author is best remembered for his remark that multi-media form of communication is by far the most effective for teaching purposes.

Wilbur Schramm's Big Media and little media:Tools and Technology for Instruction is one of the recent authoritative works on instructional media which merits attention.[17] In this volume, he assembles and reviews the existing information in connection to the choice of media for instruction. He compares the differences between big media such as computer and little media such as the overhead projector. He also points out that well-controlled and designed experiments contribute little to the knowledge of media selection for the real life situation. Laboratory experiment concerning the effectiveness of different media often shows no significant or consistant differences from something else such as (face-to-face) learning. Concerning the effect of media use in pedagogical theory, most of the analysis are found superficial. The economic aspect

[17] Wilbur Schramm, Big Media Little Media: Tools and Technologies for Instruction (London: Sage Publication, 1977)

of media use is also considered and it is found that for wide-scale use, the unit cost for "big media" would be brought down to the level comparable to those of "little media" use for small audience.

Some educational reform projects on national basis are also documented. These figures give a rather comprehensive picture of the work done in investing the effective use of various instructional media under different circumstances.

Regarding to the problem of resistance, Media and Symbols: The Form of Expression, Communication, and Education, edited by David Olson in 1974 offers a guideline directly related to media used for instruction.

A research done by Richard I. Evans in 1967, Resistance To Innovation in Higher Education, was on the use of Education Television and its role as a sample of innovation. The research a great deal of information for the present study.

Summing up these studies and findings, it is found that despite all the advantages in using audio-visual aids for instruction and learning purpose discussed in the previous chapter, these new communication media are not readily accepted by teachers as aids in the classroom teaching[18].

The findings by Eleanor P.Godfrey shows that one strong reason for the adoption of audio-visual aid into the school curriculum is that they are requested by teachers[19].

This is supported by Henry T.Ingle, who points out that resistance to educational technology by classroom teachers has been

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18 Eleanor P Godfrey, The State of Audio Visual Technology, 1961-1966. (Department of Audio Visual Instruction, National Education Association of the United States,1967)

19 Ibid.

a contributung factor to its lack of success in many countries. He argues that technology can only function in an effective manner when the human element is prepared to use the technology in the most creative way, exploring its full potential[20].

Teachers as a critical element for adoption of audio-visual aids in education technology is discussed by many internationally reputed educationalists[21].

Literature On Methodology

Lastly, a word on the various methodology of researches on media and its criticism. In this respect, Gavriel Salomon and Richard E. Clark at Reexamining the Methodology of Research on Media and Technology in Europe acts as a practical guideline. Wilbur Schrumn's Big Media Little Media also contributes. The contents of these work have been discussed.

The Hong Kong Scene

Besides these studies under the western world context, similar work on the development of instructional media in Hong Kong is lacking.

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20 Ingle, Henry T. "A Technologia Educational EA Solucao-Pare Que" (What is Educational Technology?) Instructional Report, (Washington: Information Centre on Instructional Technology Academy for Education Development, 1977)

21 Such as James D.Finn and Robert Gagne.

Since there are no secondary sources to rely upon, the writer of the present thesis has to collect and collate primary source materials. Unpublished dissertations such as the one by Clara Chen of the Chinese University of Hong Kong which researches into the use of media in the primary and secondary level can at best be regarded as peripheral to this research. However, I find the annual reports of the Education Television, the proposals and reports of the Centre for Media Resources of the University of Hong Kong, newsletters and bulletins of Instructional Development Unit of the Chinese University of Hong Kong and the Hong Kong Polytechnic, and the calendars of these institutions very useful. They not only provide me with facts and figures concerning the Hong Kong higher education, but also enable me to see the Hong Kong situation more clearly. For example, the reports of the Centre for Media Resources of the Hong Kong University also go into the discussion of possible expansion; and for this purpose, the pros and cons of instructional media have also been analysed. This gives substance to my thoughts and enables me to formulate my present topic on the use of instructional media in Hong Kong.

Research Appliances

The book review section will not be completed without a brief word on books of a technical nature. For explanation of terms, the book used is Educational Technology : a Glossary of terms; for note-making and format of presentation, the investigator follow those of Kale L. Turabian. There are many other books of references that, to make things easy and systematic, I place under the section on bibliography.

CHAPTER IV

METHODOLOGY AND PROCEDURE

General Design

Since the individual user of the instructional media is the most important variable in the process of incorporation of these techniques in education[1], the focus of this research is on the lecturer who plays the role of the 'individual user' in utilizing instructional media for teaching.

Basically, the research is a two dimensional investigation of the individual user: his actual practice and his opinion on these new technique. It is important to know whether nor not the instructional media chosen for this research are actually used, and if so, to what extent it is used. Without this information, conclusions drawn out from the teachers' opinion on these media may be inaccurate or misleading.

The opinions and needs of the teachers relating to these media may change according to their level of use. To a routine user, as he becomes more familiar with the media and more skilful

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[1] Please refer to Chapter II. "Factors Considered As Hindrance To The Acceptance Of Instructional Media In Education".

at using them, his comments on and expectations of the supporting factor may correspondingly change.

The non-user, on the otherhand, is expected to have limited knowledge of the media and the comments expressed by him usually differ from a routine user.

Since the practice of the teachers may range from non-users to the sophisticated ones, seven 'use' level, basing on the frequency of use of these media within one academic term, is used as the decision point.

The second level of the research is to obtain the opinions of the teacher on these media. Six factors have been chosen for surveying their opinions. They are the availability of hardware, the availability of software, the availability of human resources, the relative information possessed by the lecturer; the processing skill of the lecturer regarding to the utilization of the media, and the lecturers' opinion on the suitability of the media's application to the subject taught.

These are factors contributing to the adoption of or resistance to instructional technology discussed earlier[2]. These factors have not only very fine and subtle differences but are also (to a certain extent) interrelated. Before conducting any

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[2] Please refer to Chapter II. "Factors Considered As Hindrance To The Acceptance Of Instructional Media In Education".

further analysis, a word of explanation of these factors in relation to the problem of resistance and the interrelation among them should be given.

The close relationship between the availability of hardware and that of the software is evident. They are actually inseparable. Of course an institution which encourages the use of instructional media should initially prepare a big budget to purchase the necessary hardware. The nature of software needed, however, differs from subject to subject, and sometimes software for a particular hardware or project cannot be purchased off-hand. They have to be made to gear and fit into the needs of certain lectures or lessons. In this respect, the availability of human resources is closely linked to the preparation of software. These technical experts not only act as supporting teaching teams by offering advice on the use and selection of software materials, but are also vital for providing practical advice on an "on-call" basis, providing the necessary classroom assistance when needed. Thus, the close relationship between the three external factors (availability of hardware, software and supporting staff) is obvious.

Similarly, some relationships among the three internal factors (the relevant subject taught, the existing knowledge and processing skill of the lecturer in relation to the equipment,) also exist. For lecturers who teach subjects on highly theoretical and/or philosophical level where course materials for use with these

media need special designing or hard to prepare, it is highly possible that they neither seek information or knowledge on instructional media: they just do not use them. Thus the disposition of the lecturers could have certain correlationship with the teacher's possession of relevant information and skill related to instructional media. Concerning the second and third internal factors, that is, the lack of relevant information and lack of processing skill, it is logical to expect that those who have relevant information in instructional media will have better knowledge on them than those who do not have the skills in handling them. But then the question is whether knowing more is enough. Because of the technical nature of preparing software which requires special skill and/or extra time, a lecturer who knows of some technical skill still needs technical assistance. This means that the external factor of human resources is inseparately linked with the personal factor of processing skill, whether the lecturer knows or does not know any processing skill at all. Thus, both the external and internal sets of factors can be the causation and/or result of one another. In the present analysis of data, it is the author's intention to find out one by one the part played by each factor in causing resistance to the use of instructional media.

It is also noted that the variables under discussion are, to certain extent, controlled by a number of preceeding factors. Availability of hardware, software and human resources are related to the economic resources and the degree of development of the institution concerned; and this might probably be determined by the level of economic development of the community where the institution is located. The size of a class might determine a lecturer to use or not to use instructional media; even his subject matter might be largely theoretical and philosophical he will make use of the projector and/or the microphone in order to make his lecture heard and understood by the audience. There are many aspects where the media can be the extension of man. With the development of the necessary technique, a theory or a set of philosophy might be translated onto the illustrative level. Thus, the nature of the subject, too, has its preceding factors at work.

Knowledge of the existence and/or importance of instructional media might be the result of seniority in service or age of the lecturer. The personality and general knowledge of an individual, too, affect the extent of such knowledge. Processing skill has to be learned either at a technical school or through practice. In other words, the educational background, the years of service, the factor of age and the likes and dislikes of an individual teacher, all have some effects on the amount of knowledge and skill in relation to these instructional media. Some of these preceding

factors have been looked into in our questionnaires, but since the emphasis of our studies is not on these social and/or psychological factors, the investigator is content with noting their existence without complicating the study by going into detailed analysis of these factors.

Broadly speaking, the factors accounting for not using instructional media are of two types: (1) the external factors and (2) the internal factors. From the way these factors may be seen related, the following hypotheses are set.

1. The availability of hardware is positively related to the frequency of use of instructional media
2. The availability of software is positively related to the frequency of use of instructional media
3. The availability of human resources is positively related to the frequency of use of instructional media
4. The higher the level of abstraction the smaller the frequency of use of instructional media
5. The relevant information possessed by the lecturer is positively related to the frequency of use of instructional media
6. The relevant processing skill of the lecturer is positively related to the frequency of use of instructional media.

In this case, hardware refers to pieces of equipment; software means the specific format of teaching materials for use with a specific piece of equipment; human resources refer to a supporting team which includes various media specialists who offer maintenance and preparation service as well as software production. Frequency of use is determined by the average percentage of use of these media by lecturers. Instructional media include all those media that have been tabulated in Table I. Lecturers using any one item of instructional media once or more in one academic term are regarded as users. Those who indicated that they do not use any of these media are regarded as non-users.

NATURE OF THE SAMPLE

The initial work of the investigation begins with the choice of the sample for survey. The University of Hong Kong and the Chinese University of Hong Kong have been chosen because these are the leading institutions that would advocate the use of instructional media in higher education in Hong Kong. Another reason for the investigator's choice is their similarity both in academic level and economic situation. They are all government-aided and under the control of the University and Polytechnic Grant Committee. Furthermore, their administration structure, staff composition and general value are very similar.

The respondents are confined to lecturers in social science and natural science subjects. These two faculties are selected mainly because they are in the middle range where the media resources are applicable but not absolutely essential. Extreme cases such as the medical faculties where illustrations are frequently needed and the subject of philosophy, where the use of instructional media is minimal, are deliberately avoided.

Under science and social science, eleven common subjects are included : the social work/sociology, management studies, mathematics, physics, psychology, political science, economics, chemistry, botany/biology. The number of lecturers in the science and social science faculties is:

	HKU	CUHK	TOTAL
senior lecturer/above	40	48	88
lecturer/below	92	114	206
			294

Some background information of the 88 samples is as follows:

1. Number of years teaching at college level:

under 5	17
6 - 10	25
11 - 20	43
20 - above	3

2. Number of classes taught while interviewed:

1	8
2 - 3	62
4 - 5	15
6 - above	2

3. Size of class:

under 10 students	3
11 - 30 students	21
31 - 60 students	39
61 - above	23

4. Academic rank:

Senior Lecturer/above	33
Lecturer	54

5. Age:

20 - 30	2
31 - 40	47
41 - 50	30
51 - 60	7
61 - above	1

Thus, the total population of this study contains 294 individuals. From this a stratified random sampling is chosen. First the total population is divided according to colleges: the HKU and CUHK. The population is again stratified according to the various subject matter taught. Thus a total of twenty-two categories of respondents obtained. From each of these small groups, four respondents are picked by using random tables. The total sample thus obtained is eighty-eight individuals, eight individuals in each of the eleven subjects, four of whom coming from the Hong Kong University and the other four from the Chinese University.

COLLECTION OF DATA

The chief method of data collection is by questionnaires, supplemented by pre-interviews with audio-visual staff of these universities and released by their instructional media centres.

The interviews provide substantial ground concerning the resources available and the extent to which instructional media are used. This could contribute to the final analysis.

By reviewing the relevant literatures and previous researches done as well as by having discussions with the audio-visual staff of the two organizations, a general concept is obtained in regard to the focus of investigation.

The questionnaires are distributed and collected by hand by trained interviewers, mainly students of the two institutions. In this way the investigator has a better control of the timing for responses as well as a higher rate of response than sending them by mail.

THE QUESTIONNAIRE

Hypotheses are developed and based on the existing knowledge and expierence in this field as well as relevant innovation and communication theories. It is decided that the focus will be limited to the internal and external factors of resistance to the use of instructional media by lecturers.

The items of instructional media included for investigation are those commonly available and most often used in higher education in Hong Kong. These include the blackboard, the white board, the overhead projector, slides, slide/tape machine, film: 16mm, film: super 8, opaque projector, video tape play backs, and TV production, a total of ten items.

The questionnaire is constructed with the view of providing data for the analysis. Before it was sent out, its contents had been reviewed by four experts of the AV instructional field. The questionnaire has been commented and revised by the four audio visual officers of the two universities with at least three years of service.

Basically the questionnaire enquires three categories of information: (1) the existing practice or the extent of use, (2) the opinion of the lecturers on these instructional media, and (3) professional, academic and biographical background of the respondent.

The items asked in the questionnaire are related directly to the hypotheses set. They are: the frequency of use; the reason for using: the reason for not using and their opinion in relation to the six factors.

RATE OF RETURN

The returning rate of the questionnaire is 100% due to the following reason:

1. The questionnaires were distributed and collected by interviewees students of the two universities in person.
2. In most cases, chosen respondent of a particular subject is interviewed by a person who has taken his courses.
3. The research was carried out during the last week of the second term at the Chinese University of Hong Kong and the third term in the Hong Kong University, just before the final examinations in both cases. During this period almost all the lecturers are present.

Originally, it was the investigator's intention to interview the respondents. However, most of the lecturers prefer to give the answers in straight confidentiality, filling the questionnaires themselves and sealing them before returning.

Among these respondents, two did not answer the number of years of teaching, one did not indicate the number of classes responsible, two did not indicate the size of classes and two did not write down their official grade. One did not show his age and one did not indicate the college he is teaching, but it is quite obvious that it came from the Hong Kong University judging from the numbering process. There are one or two missing answers among the first part of the questionnaire (question number one to ten). However, since these do not affect the result, they are all counted valid and the overall rate of response is very satisfactory.

PROCESS OF DATA

To analyse the result, the seven point scale, a measuring instrument adopted from the western paradigm is used to measure the extent of use. The opinion of the lecturer expressed is coded according to the external factors or internal factors as defined earlier. In order to identify all factors, one column is left open ended which will be coded accordingly.

The main purpose of the tables are: (1) to show how are the users and non-users, (2) the degree of use of the different kinds of instructional media and (3) to arrive at the artificial dividing of the sample in two categories, the users and the non-users. This is important in our subsequent inquiries into the various factors. The background data throw light on to the preceding factors suggested earlier.

DATA ANALYSIS

The first step in analysing is to identify the user and the non-user of instructional media. Lecturers who tick one or more media in the one to six columns is other than the white board and black-board as shown in table one will be regarded as users. Only those who tick "never" (column seven) for all items aside from blackboard or white board will be classified as non-users.

The second level of analysis is to seek the reasons for not using the various media of instruction. These will provide evidence for

supporting or not supporting the hypotheses. The enquiries on the reasons for using media play more as a supporting role; since the main emphasis of the present discussion is on resistance factors rather than on "reasons in favour of instructional media". Its inclusion, however, does not only complete the picture but also engender less suspicion on the respodent. In addition, the information obtained can also shed light (if not directly) onto the reasons why others do not make use of the instructional media. The questionnaires are designed to include both positive and negative questions (for example reasons for using and reasons for not using) in order to get the true opinion of interviewees and to eliminate bias.

The background information section will help the investigator in knowing the relationships between years of service at college level, age, size of classes and number of classes, and the use of instructional media. All data collected will be compiled, and the aggregate data will be tabulated for presentation in the descriptive analysis. These written records will be supplemented by other interviews and factual data collected at the media centres.

CHAPTER V

FINDINGS: SURVEY OF AV PROGRAMMES AT THE TWO UNIVERSITIES

As discussed earlier, effective utilization of educational media largely depends on the teacher as the user. To use or not to use these media is primary a matter of whether the teacher understands the media, whether he knows their potentials and limitations, whether media and material are available, whether they have the skill in using them, and the confidence in the media, and finally whether they appreciate the importance of the media to his teaching duties. Knowledge is of critical importance in his process of decision-making and familiarity with the media can be a result of experience. Therefore before analysing the opinions of the respondents, their actual practice or their 'experience' is put under survey.

For easy analysis, artificial division is drawn between the users and the non-users. All respondents indicating 1% to 100% of use in each item are considered as users. Only those indicating 0% of use in each item are considered as non-users. In general, students can learn from any media and about any subject under nearly all the conditions under test[1]. They can learn as much as from books, through television or computer, as from face to face teaching. Electronic media are quite capable of serving as substitutes for

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1. [1] Schramm, W., Big Media Little Media: Tool and Technologies for Instruction, 1977, p. 59.

the teacher. However, if we only consider the media as aids in the classroom and as supplements to human lectures, we must consider some fine differentiation in the functions of these media. Among the ten items included in this survey, the blackboard, the white board, the overhead projector and slide are only capable of presenting still visual forms. Film and television reveal movements or series of action. Tape-slides synchronized film and television provide not only visual information but also audio supplements. Since the application should be relevant to the course of instruction to which it is applied, we find that in some courses certain media may be appropriately used only for a few hours in an entire term. In view of this point, the artificial division of users and non-users is based on their experience of using, be it 1% or 100% of lecture use. Among the users' group, it can further be divided into the high users' group (80% - 100% of lectures used), the medium users' group (40% - 79% of lectures used), and the low users' group (1% - 39% of lectures used). This division enables detailed analysis of the opinions given by the teachers; as familiarity with the devices and expectations from the supporting factors may vary from high users to low users.

Frequency Of Use: The General Pattern

From Table 1b, it is found that the blackboard, the white board, the overhead projector and slides are most welcomed by lecturers for instruction purpose. (99% of the sample are

Table 1a

FREQUENCY OF USE

		ALWAYS (100% of lectures)	VERY OFTEN (80% - 99% of lectures)	OFTEN (60% - 79% of lectures)	SOMETIMES (40% - 59% of lectures)	SELDOM (20% - 39% of lectures)	VERY SELDOM (1% - 19% of lectures)	NEVER (0%)	NO RESPONSE	TOTAL RESPONSE
Blackboard	N	32	27	8	5	6	9	1	0	88
	%	36	31	9	6	7	10	1	0	100
	%	(65)	(60)	(24)	(19)	(14)	(6)	(0)	(0)	
White board	N	4	5	9	3	7	16	44	0	88
	%	5	6	10	3	8	18	50	0	100
	%	(8)	(11)	(26)	(12)	(16)	(11)	(10)	(0)	
Overhead Projector (and transparency)	N	11	11	10	10	6	23	17	0	88
	%	13	13	11	11	7	26	19	0	100
	%	(22)	(24)	(29)	(39)	(14)	(16)	(4)	(0)	
Slide	N	2	1	2	3	7	30	43	0	88
	%	2	1	2	3	8	34	49	0	100
	%	(4)	(2)	(6)	(12)	(16)	(21)	(9)	(0)	
Slide/Tape Synchronized (ring-master)	N	0	0	0	0	3	12	73	0	88
	%	0	0	0	0	3	14	83	0	100
	%	(0)	(0)	(0)	(0)	(7)	(9)	(16)	(0)	
Film: 16mm (sound/without sound)	N	0	1	0	2	6	19	60	0	88
	%	0	1	0	2	7	22	68	0	100
	%	(0)	(2)	(0)	(8)	(14)	(13)	(13)	(0)	
Film: Super 8 (sound/without sound/ cartrige)	N	0	0	0	1	2	8	77	0	88
	%	0	0	0	1	2	9	88	0	100
	%	(0)	(0)	(0)	(4)	(5)	(6)	(17)	(0)	
Opaque Projector	N	0	0	0	0	0	5	8	75	88
	%	0	0	0	0	0	6	9	85	100
	%	(0)	(0)	(0)	(0)	(0)	(4)	(2)	(100)	
Video Tape playback (½/½ VHS or any format) (Produces by outside services)	N	0	0	3	2	5	15	63	0	88
	%	0	0	3	2	6	17	72	0	100
	%	(0)	(0)	(9)	(8)	(11)	(11)	(14)	(0)	
TV production (self-produced)	N	0	0	2	0	2	5	79	0	88
	%	0	0	2	0	2	6	90	0	100
	%	(0)	(0)	(6)	(0)	(5)	(4)	(17)	(0)	
TOTAL	N	49	45	34	26	44	142	465	75	880
	%	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	

Source: responses from questionnaires.

Table 1b

Teaching Aids: Users and Non-Users

Instructional media type		Total responses		
		User	Non-User	Total
Blackboard	%	99	1	100
	N	87	1	88
White board	%	50	50	100
	N	44	44	88
Overhead projector	%	81	19	100
	N	71	17	88
Slide	%	51	49	100
	N	45	43	88
Slide tape synchronized	%	17	83	100
	N	15	73	88
Film: 16mm	%	38	62	100
	N	28	60	88
Film: Super 8	%	12	88	100
	N	11	77	88
Opaque projector	%	8	92	100
	N	80	8	88
Video Tape	%	28	72	100
	N	25	63	88
TV Programme	%	10	90	100
	N	9	79	88

Source: responses from questionnaires.

blackboard users, 50% are white board users, 81% are overhead projector users and 51% are slide users). Out of the ten listed items, an average of 63% of the use among the high users group (80% to 100% of lectures) is the blackboard (Table 1); an average of 22% of use is the overhead projector, whereas the whiteboard occupies an average of 9%. (Slide takes another 3% and film: 16mm 1%). As to other more sophisticated devices such as slide-tape synchronized, film, opaque projector, video tape and television, the percentages of non-users are obviously high (ranging from 68% to 90% of those represented being 0% users).

We can see from this distribution that the traditional "chalkboard" teaching method, is still very popular, whether the lecturers sampled make use of other instructional media or not. Of the 88 sampled, only one writes that he does not use the blackboard for teaching and the chance of his using the white board or the overhead projector is high too. In fact the nature and function of these three devices is very similar, and can be used with/without special preparation; they can also be substituted in one another's place. Basically, the use of one or more of these media does not alter in any way the traditional "chalkboard" teaching style.

Other sophisticated media which need much preparation work and alternation in teaching style are found much less frequently used. Apart from video tape (an average of 2.5% in the middle users' group) most of the use is limited to the low user group (1% to 20% of lectures). Even for slides, 34% of the users lie within the

'very seldom' range. The only use for other devices ranges from 6% (television) to 22% (film: 16mm) in the low user groups. The use of these media are obviously limited to the low user group.

Media Use In The Two Universities

Table 2

Media Use in Hong Kong University and
The Chinese University of Hong Kong

Instructional media type		USER		NON-USER		NO RESPONSE		TOTAL	
		HKU	CU	HKU	CU	HKU	CU	HKU	CU
Blackboard	%	98	100	2	0	0	0	100	100
	N	43	44	1	0	0	0	44	44
White board	%	55	16	45	32	0	52	100	100
	N	24	7	20	14	0	23	44	44
Overhead projector	%	91	68	7	30	2	2	100	100
	N	40	30	3	13	1	1	44	44
Slide	%	55	43	41	57	2	0	100	100
	N	24	19	18	25	2	0	44	44
Slide Tape	%	11	23	86	77	2	0	100	100
	N	5	10	38	34	1	0	44	44
Film: 16 mm	%	30	27	66	64	5	9	100	100
	N	13	12	29	28	2	4	44	44
Film: Super 8	%	9	14	86	86	5	0	100	100
	N	4	6	38	38	2	0	44	44
Opaque Projector	%	7	5	89	91	5	5	100	100
	N	3	2	39	40	2	2	44	44
Video Tape	%	27	27	70	73	2	0	100	100
	N	12	12	31	32	1	0	44	44
TV Programme	%	16	5	73	95	11	0	100	100
	N	7	2	32	42	5	0	44	44

Source: responses from questionnaires.

From Table 2, it is seen that the practice of the lecturers of the two universities in regard to media use is quite similar. Differences, however, are seen in the use of the white board and the overhead projector. Since the blackboard, the white board and the overhead projector are very similar in nature and function, and can be substituted in one another's place, the main difference lies in the availability of the media themselves[2]. As to other items, the deviation is less than 15%, an indication of close similarity between the two universities. For slides, both the users and non-users in the two universities lie within the middle range (55% in H.K.U. are users and 43% in C.U. are users). For slide-tape synchronized, films, opaque projectors, video tapes and television, a large proportion of lecturers in both universities are non-users, ranging from 64% to 95% of the sample.

Subject Matter Versus Media Use

From Table 3a, it is seen that the use of instructional media in the two universities is definitely related to the different subjects matter taught. Subjects with largest frequency of use for

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[2] The H.K.U. staff make use of the white board and the projector much more than those of C.U. This point will be brought forth again and explained in the relevant section below.

each instructional media type are listed below:

Blackboard	- all subjects (85% - 100%)
White board	- Physics (75%), Social Work (65%), Political Science (50%)
Overhead Projector	- all subjects (over 50%)
Slide	- Political Science (100%), Physics (88%), Biology (88%)
Slide Tape	- Social Work (63%), Biology (37%), Political Science (37%)
Film: 16mm	- Psychology (75%), Biology (63%), Social Work (50%)
Film: Super 8	- Biology (37%), Political Science (25%), Psychology (25%)
Opaque Projector	- Psychology (25%), Social Work, Biology, Political Science (12%)
Video Tape	- Social Work (75%), Political Science (75%), Psychology (65%)
TV Programme	- Social Work (25%), Psychology (25%), Management Studies (25%)

It is quite obvious that from the survey, motion pictures are more welcomed by subjects such as Social Work, Psychology, where direct observation of phenomena is essential. Subjects where iconic visual aids play an important part include Biology, Physics and Political Science. Still pictures as projected by slides are used very frequently by teachers of these diciplines: (Biology, Physics 88%, Political Science 100%). Other subjects, such as Mathematics and Statistics where digital code is the basic form of communication, do not require slides and films or TV at all (0%) (Table 3a).

One interesting finding is that for Political Science,

Table 3a Media Use by Different Subject

		Blackboard		White board		Overhead projector		Slide		Slide Tape		Film 16mm		Film super 8		Opaque projector		Video Tape		TV programme	
		user	non-user	user	non-user	user	non-user	user	non-user	user	non-user	user	non-user	user	non-user	user	non-user	user	non-user	user	non-user
Social Work	%	100	0	63	37	63	37	63	37	63	37	50	12	12	75	12	88	75	25	25	75
	N	8	0	5	3	5	3	5	3	5	3	4	1	1	6	1	7	6	2	2	6
Management Studies	%	88	0	37	50	75	12	37	50	12	75	37	50	12	75	0	88	25	63	2	75
	N	7	0	3	4	6	1	3	4	1	6	3	4	1	6	0	7	2	5	1	6
Mathematics	%	100	0	12	88	75	25	0	100	0	88	12	88	0	100	0	100	0	100	0	100
	N	8	0	1	7	6	2	0	8	0	7	1	7	0	8	0	8	0	8	0	8
Physics	%	100	0	75	25	100	0	88	12	12	88	12	88	0	100	0	88	12	88	0	100
	N	8	0	6	2	8	0	7	1	1	7	1	7	0	8	0	7	1	7	0	8
Chemistry	%	100	0	25	25	88	0	37	63	0	100	12	88	12	88	0	100	0	100	12	88
	N	8	0	2	2	7	0	3	5	0	8	1	7	1	7	0	8	0	8	1	7
Biology	%	100	0	12	37	100	0	88	0	37	63	63	37	37	25	12	88	25	75	12	88
	N	8	0	1	3	8	0	7	0	3	5	5	3	3	5	1	7	2	6	1	7
Economics	%	88	12	25	25	50	50	12	88	0	100	0	100	0	100	0	100	0	100	0	100
	N	7	1	2	2	4	4	1	7	0	8	0	8	0	8	0	8	0	8	0	8
Political Science	%	100	0	50	0	100	0	100	0	37	63	37	63	25	75	12	88	75	25	12	88
	N	8	0	4	0	8	0	8	0	3	5	3	5	2	6	1	7	6	2	1	7
Psychology	%	100	0	12	0	100	0	50	50	12	88	75	0	25	75	25	75	63	37	25	63
	N	8	0	1	0	8	0	4	4	1	7	6	0	2	6	2	6	5	3	2	5
Statistics	%	100	0	12	0	75	25	37	63	0	100	0	100	0	100	0	100	12	88	0	100
	N	8	0	1	0	6	2	3	5	0	8	0	8	0	8	0	8	1	7	0	8
Sociology	%	100	0	25	12	63	37	37	63	12	88	12	88	0	100	0	100	12	88	12	50
	N	8	0	2	1	5	3	3	5	1	7	1	7	0	8	0	8	1	7	1	4
No Response	%	1		36		2		2		2		7		2		2		1		6	
	N	1		32		2		2		2		6		2		2		1		5	
sample size	%	100		100		100		100		100		100		100		100		100		100	
	N	88		88		88		88		88		88		88		88		88		88	

Source: Responses from questionnaires.

there is frequent application of instructional media of various nature, (including the white board, slide, slide tape, film, opaque projector and video tape). Since the nature of Political Science subject (which seems to be theoretically based) should have less need for iconic visual aids than Biology and Physics, a further investigation is necessary. It is found that the lecturers in this subject, particularly those in the Chinese University of Hong Kong, make frequent travels and brought back from foreign countries much course material (software) which are relative to these technical aids. Furthermore, it happens that the new head of the department is a habitual user of these technical aids for teaching[3]. His own practice and advocacy set a good example to other staff members of his department and definitely have a certain effect on their use of new instructional media.

Thus, in this case at least, motivation in employing new technical aids is driven by the personal factor of coercion and encouragement. At the university, such coercion and encouragement may or may not come from the head of a department, depending, of course, on the temperaments and beliefs of the latter, plus his ability to control or influence his colleagues. As far as the Political Science Department at the Chinese University of Hong Kong is concern, he is definitely a plus-factor in facilitating the use of instructional media in his department.

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3 Information obtained by interviewing a lecturer of the department.

Teaching Load Versus Frequency Of Use

Since modern instructional media are capable of mechanising and automating the process of teaching by transmitting, amplifying and/or distributing materials, thus widening the lecturer's impact on the potential audience, it is logical to expect that the number of classes and size of classes responsible by a lecturer should have definite influence on the degree of use of these media. However, in the sample chosen, number of classes taught and size of classes taught are found not determining factors for the frequency of media use. Table 4 shows the number of users and non-users in various groups of lecturers in charge of different numbers of classes. Under various media used, it is found that the distribution of users and non-users are very similar. For the more traditional media like blackboard, there are over 98% users in all groups. For white board, the distribution of users and non-users are half and half. As discussed earlier, the availability of the medium is a causal factor here. The difference in user and non-user distribution between the second group (2-3) and the third group (4-above) is less than 10% under overhead projector, films, opaque projector, and TV/video tape. Under 'slide tape', the difference is 13% and under 'slide' the difference is 23%. There are more users in the third group (71% users, 29% non-users) than the second group (48% users, 52% non-users) under this medium. However, when considering the size of the group (62 in the second group and 17 in the third group) the difference of 23% is still subtle. Furthermore, because there are only 8 respondents in the

"1-class" group, the result is not representative and therefore not discussed here.

Similar pattern is found in the Table showing sizes of classes and media use (Table 5). The number of users and non-users come very close in the first (under 30), second (31-60) and third groups (61 and above). For slide tape, super 8 film and video tape, there is a slight increase in the number of users in smaller class size (Table 5). The three media is found more suitable for smaller group than large group teaching. In each case, there are more non-users than users, signifying little difference among the groups.

Some Personal Attributes and Media Use

Although personal characteristics of the teachers are found related to their behaviours in many cases[4], personal attributes such as years of teaching, age, and official rank are found to play only a small role in determining the frequency of media use. Table 6 shows that there are over 84% users in all groups under blackboard and overhead projector. For white board, the distribution is again half and half. There are more non-users than users in all 'experience' groups under slide tape, super 8 film, opaque projector, video tape and TV programme. In general the difference between the groups possessing various years of teaching experience is little except for those more sophisticated items such as slide and 16mm film. In case of slide, 16mm film

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[4] Lidtke, Doris K., Securing Teacher Acceptance of Technology. Paper presented at the National Conference of Technology and Education. (Washington, D.C. 1981)

Table 4

NO. OF CLASSES AND MEDIA USED

Number \ Total %	User	Non-User	Total
1	87% 7	13% 1	100% 8
2 - 3	81% 50	19% 12	100% 62
4 - above	76% 13	24% 4	100% 17

$x^2 = 1.04$ df = 2 N.S.

OVERHEAD PROJECTOR

Number \ Total %	User	Non-User	Total
1	25% 2	75% 6	100% 8
2 - 3	48% 30	52% 32	100% 62
4 - above	71% 12	29% 5	100% 17

$x^2 = 1.74$ df = 2 N.S.

SLIDE

1	0% 0	100% 8	100% 8
2 - 3	16% 10	84% 52	100% 62
4 - above	29% 5	71% 12	100% 17

$x^2 = 1.99$ df = 2 N.S.

SLIDE TAPE

1	12% 1	88% 7	100% 8
2 - 3	35% 22	65% 40	100% 62
4 - above	29% 5	71% 12	100% 17

$x^2 = 1.15$ df = 2 N.S.

FILM 16MM

1	0% 0	100% 8	100% 8
2 - 3	16% 10	84% 52	100% 62
4 - above	6% 1	94% 16	100% 17

$x^2 = 2$ df = 2 N.S.

FILM SUPER 8

1	0% 0	100% 8	100% 8
2 - 3	8% 5	92% 57	100% 62
4 - above	12% 2	88% 15	100% 17

$x^2 = 2.2$ df = 2 N.S.

OPAQUE PROJECTOR

1	12% 1	88% 7	100% 8
2 - 3	30% 19	70% 43	100% 62
4 - above	29% 5	71% 12	100% 17

$x^2 = 0.75$ df = 2 N.S.

VIDEO TAPE

1	0% 0	100% 8	100% 8
2 - 3	11% 7	89% 55	100% 62
4 - above	12% 2	88% 15	100% 17

$x^2 = 1.33$ df = 2 N.S.

TV PROGRAMME

1	100% 8	0% 0	100% 8
2 - 3	98% 61	2% 1	100% 62
4 - above	100% 17	0% 0	100% 17

$x^2 = 0$ df = 2 N.S.

BLACKBOARD

1	47% 3	63% 5	100% 8
2 - 3	48% 30	52% 32	100% 62
4 - above	65% 11	35% 6	100% 17

$x^2 = 1.03$ df = 2 N.S.

WHITE BOARD

Table 5

SIZE OF CLASS AND MEDIA USE

Total % / Number	User	Non-User	Total
under 30	75% 18	25% 6	100% 24
31 - 60	82% 32	18% 7	100% 39
61 - above	83% 19	17% 4	100% 23

$x^2 = 0.42$ df = 2 N.S.

OVERHEAD PROJECTOR

Total % / Number	User	Non-User	Total
under 30	42% 10	52% 14	100% 24
31 - 60	49% 19	51% 20	100% 39
61 - above	61% 14	39% 9	100% 23

$x^2 = 1$ df = 2 N.S.

SLIDE

under 30	25% 6	75% 18	100% 24
31 - 60	18% 7	82% 32	100% 39
61 - above	9% 2	91% 21	100% 23

$x^2 = 1.2$ df = 2 N.S.

SLIDE TAPE

under 30	33% 8	67% 16	100% 24
31 - 60	36% 14	64% 25	100% 39
61 - above	22% 5	78% 18	100% 23

$x^2 = 0.7$ df = 2 N.S.

FILM 16MM

under 30	25% 6	75% 18	100% 24
31 - 60	8% 3	92% 36	100% 39
61 - above	9% 2	91% 21	100% 23

$x^2 = 2.1$ df = 2 N.S.

FILM SUPER 8

under 30	8% 2	92% 22	100% 24
31 - 60	5% 2	95% 37	100% 39
61 - above	9% 2	91% 21	100% 23

$x^2 = 0.3$ df = 2 N.S.

OPAQUE PROJECTOR

under 30	38% 9	62% 15	100% 24
31 - 60	26% 10	74% 29	100% 39
61 - above	22% 5	78% 18	100% 23

$x^2 = 0.8$ df = 2 N.S.

VIDEO TAPE

under 30	12% 3	88% 21	100% 24
31 - 60	8% 3	92% 36	100% 39
61 - above	9% 2	91% 21	100% 23

$x^2 = 0.83$ df = 2 N.S.

TV PROGRAMME

under 30	100% 24	0% 0	100% 24
31 - 60	100% 39	0% 0	100% 39
61 - above	96% 22	4% 1	100% 23

$x^2 = 1.04$ df = 2 N.S.

BLACKBOARD

under 30	50% 12	50% 12	100% 24
31 - 60	54% 21	46% 18	100% 39
61 - above	43% 10	57% 13	100% 23

$x^2 = 0.46$ df = 2 N.S.

WHITE BOARD

and video tape, there is a tendency of more users in the second group (6-10) than others. One possible explanation for this phenomenon as seen in Table 6 is that lecturers under 5 years of teaching are still junior in their present posts, and unless they have previous experience of using instructional media, it takes some time for them to adapt to the new devices. The second group joined the institutions just at the time the media centres were set up[5]. The chance of their being influenced by the advocacy and freshness of these centres is great. As to those with longer years of teaching experience, it is more unlikely that they will change their practice. However, judging from the percentages shown in the Table, the difference is subtle.

In Table 7, it is found that the percentages of users and non-users in the second (31-40) and third (41-50) groups (where the larger percentages of the sample fall) are very similar. Since the numbers of respondents falling in group 1 (20-30) and group 4 (51-above) are small these groups should not be under too serious consideration. Table 8, showing official Rank and Media Use also indicates that the academic positions of the lecturers have little influence on their degree of media use. The Table reveals that both the lecturers' and senior lecturers' group have very similar behavior under the same item. They are either

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[5] These Centres are set up in 1975-1976.

Table 6

YEAR OF TEACHING AND MEDIA USED

Total % / Number	User	Non-User	Total
under 5	71% 12	29% 5	100% 17
6 - 10	84% 21	16% 4	100% 25
11 - above	85% 39	15% 7	100% 46

$x^2 = 1.21$ df = 2 N.S.

OVERHEAD PROJECTOR

Total % / Number	User	Non-User	Total
under 5	29% 5	71% 12	100% 17
6 - 10	76% 19	24% 6	100% 25
11 - above	50% 23	50% 23	100% 46

$x^2 = 2.04$ df = 2 N.S.

SLIDE

under 5	0% 0	100% 17	100% 17
6 - 10	40% 10	60% 15	100% 25
11 - above	15% 7	85% 39	100% 46

$x^2 = 2.73$ df = 2 N.S.

SLIDE TAPE

under 5	29% 5	71% 12	100% 17
6 - 10	76% 19	24% 6	100% 25
11 - above	33% 15	67% 31	100% 46

$x^2 = 2.45$ df = 2 N.S.

FILM 16MM

under 5	12% 2	88% 15	100% 17
6 - 10	16% 4	84% 21	100% 25
11 - above	15% 7	85% 39	100% 46

$x^2 = 0.4$ df = 2 N.S.

FILM SUPER 8

under 5	6% 1	94% 16	100% 17
6 - 10	4% 1	96% 24	100% 25
11 - above	15% 7	85% 39	100% 46

$x^2 = 1.4$ df = 2 N.S.

OPAQUE PROJECTOR

under 5	24% 4	76% 13	100% 17
6 - 10	48% 12	52% 13	100% 25
11 - above	24% 11	76% 35	100% 46

$x^2 = 1.3$ df = 2 N.S.

VIDEO TAPE

under 5	12% 2	88% 15	100% 17
6 - 10	20% 5	80% 20	100% 25
11 - above	9% 4	91% 42	100% 46

$x^2 = 1.05$ df = 2 N.S.

TV PROGRAMME

under 5	94% 16	6% 1	100% 17
6 - 10	100% 25	0% 0	100% 25
11 - above	100% 46	0% 0	100% 46

$x^2 = 2.1$ df = 2 N.S.

BLACKBOARD

under 5	29% 5	71% 12	100% 17
6 - 10	64% 16	36% 9	100% 25
11 - above	54% 25	46% 21	100% 46

$x^2 = 1.45$ df = 2 N.S.

WHITE BOARD

YEAR OF TEACHING

Table 7

AGE AND MEDIA USE

Number / %	User	Non-User	Total
under 40	79% 39	21% 10	100% 49
41 - 50	87% 26	13% 4	100% 30
51 - above	63% 5	37% 3	100% 8

$x^2 = 1.1$ df = 2 N.S.

OVERHEAD PROJECTOR

Number / %	User	Non-User	Total
under 40	65% 32	35% 17	100% 49
41 - 50	63% 19	37% 11	100% 30
51 - above	75% 6	25% 2	100% 8

$x^2 = 0.65$ df = 2 N.S.

SLIDE

under 40	12% 6	88% 43	100% 49
41 - 50	23% 7	77% 23	100% 30
51 - above	25% 2	75% 6	100% 8

$x^2 = 1.94$ df = 2 N.S.

SLIDE TAPE

under 40	31% 15	69% 34	100% 49
41 - 50	37% 11	63% 19	100% 30
51 - above	12.5% 1	87.5% 7	100% 8

$x^2 = 0.96$ df = 2 N.S.

FILM 16 MM

under 40	10% 5	90% 44	100% 49
41 - 50	20% 6	80% 24	100% 30
51 - above	0% 0	100% 8	100% 8

$x^2 = 1.89$ df = 2 N.S.

FILM SUPER 8

under 40	4% 2	96% 47	100% 49
41 - 50	17% 5	83% 25	100% 30
51 - above	0% 0	100% 8	100% 8

$x^2 = 3.06$ df = 2 N.S.

OPAQUE PROJECTOR

under 40	27% 13	73% 36	100% 49
41 - 50	30% 9	70% 21	100% 30
51 - above	37% 3	63% 5	100% 8

$x^2 = 0.75$ df = 2 N.S.

VIDEO TAPE

under 40	10% 5	90% 44	100% 49
41 - 50	6% 2	94% 28	100% 30
51 - above	25% 2	75% 6	100% 8

$x^2 = 1.77$ df = 2 N.S.

TV PROGRAMME

under 40	98% 48	2% 1	100% 49
41 - 50	100% 30	0% 0	100% 30
51 - above	100% 8	0% 0	100% 8

$x^2 = 0$ df = 2 N.S.

BLACKBOARD

under 40	49% 24	51% 25	100% 49
41 - 50	50% 15	50% 15	100% 30
51 - above	63% 5	37% 3	100% 8

$x^2 = 0.58$ df = 2 N.S.

WHITE BOARD

Table 8

GRADE AND MEDIA USE

% Number	User	Non-User	Total
Senior Lecturer	87% 29	13% 4	100% 33
Lecturer	76% 41	24% 13	100% 54

$x^2 = 0.59$ N.S.
df = 1

OVERHEAD PROJECTOR

% Number	User	Non-User	Total
Senior Lecturer	56% 18	44% 15	100% 33
Lecturer	50% 27	50% 27	100% 54

$X^2 = 0.24$ df = 1 N.S.

SLIDE

Senior Lecturer	16% 6	84% 27	100% 33
Lecturer	18% 10	82% 44	100% 54

$x^2 = 0$ df = 1 N.S.

SLIDE TAPE

Senior Lecturer	28% 10	72% 23	100% 33
Lecturer	31% 17	69% 37	100% 54

$x^2 = 0$ df = 1 N.S.

FILM 16 MM

Senior Lecturer	9% 4	91% 29	100% 33
Lecturer	15% 8	85% 46	100% 54

$x^2 = 0.4$ df = 1 N.S.

FILM SUPER 8

Senior Lecturer	12% 5	88% 28	100% 33
Lecturer	4% 2	96% 52	100% 54

$x^2 = 1.2$ df = 1 N.S.

OPAQUE PROJECTOR

Senior Lecturer	31% 11	69% 22	100% 33
Lecturer	26% 14	74% 40	100% 54

$x^2 = 0.37$ df = 1 N.S.

VIDEO TAPE

Senior Lecturer	6% 3	94% 30	100% 33
Lecturer	11% 6	89% 48	100% 54

$x^2 = 0$ df = 1 N.S.

TV PROGRAMME

Senior Lecturer	100% 33	0% 0	100% 33
Lecturer	98% 53	2% 1	100% 54

$x^2 = 1.03$ df = 1 N.S.

BLACKBOARD

Senior Lecturer	53% 18	47% 15	100% 33
Lecturer	48% 26	52% 28	100% 54

$x^2 = 0.19$ df = 1 N.S.

WHITE BOARD

high users (blackboard, overhead projector) or low users (opaque projector, TV programme, super 8 films, slide tape) in all groups, or, in case where the hardware supply is a causual factor like the white board, equally distributed.

Since it is not the intention of the researcher to investigate the social-psychological reasons of the individual lecturers for their habit of media use, discussion on these factors will not go into further details. It is quite sufficient to know that the relevant work load, years of teaching, age and academic rank of lecturers have little relation with their use of these modern media. In other words, the nature of the sample exhibits close similarity in these respects, and no significant differentiation is seen when it (the sample) is tested under the above personal attributes.

CHAPTER VI

SURVEY OF OPINIONS CONCERNING THE USE OF INSTRUCTIONAL MEDIA

After investigating the general practices of lecturers in the two universities in Hong Kong, the next level of survey is to find out the opinions of the lecturers in regard to the use of media and the problems which they are experiencing and which may hinder the utilization of these devices. Six factors are hypothesized as positively related to the level of use. The three external factors are the availability of hardware, the availability of software and the availability of technical support. The three internal factors are lecturers' opinion on the suitability of the medium for presenting relative subject matter, the lecturer's knowledge of its existence and the relevant processing skill possessed by the lecturer. One extra column "others" is found in the questionnaire, allowing for open end responses.

In general (Table 9), it is found that "unfit for subject matter" is the most popular reason given for all the items listed (an average of 37% of the response among the seven factor). In other words, it means that the subject matter or the belief of the nature of the subjects has a great deal to do with the use of modern media. (There is some reservation here in justifying the saying of 'suitability' of media for certain subject matters because according to many tests, students can learn about any

Table 9

REASONS FOR NOT USING

		no hardware available	no software available	lack of technical support	unfit for subject matter	having no knowledge about its existence	lack of skill in producing related software	Other	total response
Overhead Projector	N	4	7	6	19	0	1	10	47
	%	9	15	13	40	0	2	21	100
	%	(5)	(5)	(8)	(7)	(0)	(2)	(13)	(6)
Slide Projector	N	5	21	13	38	2	4	13	96
	%	5	22	14	40	2	4	14	100
	%	(6)	(14)	(16)	(14)	(4)	(7)	(17)	(12)
Tape Slide Machine	N	1	21	12	41	7	8	11	101
	%	1	21	12	41	7	8	11	100
	%	(1)	(14)	(15)	(15)	(14)	(14)	(14)	(13)
Film: 16MM	N	10	26	10	33	4	5	10	98
	%	10	27	10	34	4	5	10	100
	%	(13)	(17)	(13)	(12)	(8)	(9)	(13)	(2)
Film: Super 8	N	16	24	7	38	6	6	10	107
	%	15	22	7	36	6	6	9	100
	%	(21)	(16)	(9)	(14)	(12)	(10)	(13)	(14)
Opaque Projector	N	19	11	11	34	27	10	4	116
	%	16	10	10	29	23	9	3	100
	%	(24)	(7)	(14)	(12)	(52)	(17)	(5)	(15)
Video Tape	N	9	23	11	36	1	7	8	95
	%	10	24	12	38	1	7	8	100
	%	(11)	(15)	(14)	(13)	(2)	(12)	(10)	(12)
TV Programme	N	15	20	9	40	5	17	11	117
	%	13	17	8	34	4	15	9	100
	%	(19)	(13)	(11)	(14)	(10)	(2)	(14)	(15)
TOTAL	N	79	153	79	279	52	58	77	777
	%	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

Source: responses from questionnaires.

N.B. The total response is more than 88 because some respondents have ticked more than one reason.

subject from any media[1]. Of course for the latter use there must be properly designed course material to go with.) Referring to Table 3 , (discussed in the previous chapter), it is found that subjects like mathematics, economics and statistics have the

Table 10

REASONS FOR NOT USING

FREQUENCY OF USE		no hardware available	no software available	lack of technical support	unfit for subject matter	having no knowledge about its existence	lack of skill in producing related software	Other	total response
High User (80%-100%)	N	5	12	4	10	2	4	6	43
	%	12	28	9	23	5	9	14	100
	%	(6)	(8)	(5)	(4)	(4)	(7)	(8)	(6)
Medium User (40%-79%)	N	0	14	6	11	0	3	6	40
	%	0	35	15	28	0	8	15	100
	%	(0)	(9)	(8)	(4)	(0)	(5)	(8)	(5)
Low User (1%-39%)	N	7	21	7	11	0	4	11	61
	%	12	34	12	18	0	7	18	100
	%	(8)	(14)	(9)	(4)	(0)	(7)	(14)	(8)
Non User (0%)	N	76	106	62	245	50	47	54	640
	%	12	17	10	38	8	7	8	100
	%	(86)	(69)	(79)	(88)	(96)	(81)	(70)	(82)
TOTAL	N	88	153	79	277	52	58	77	784
	%	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

Source: responses from questionnaires.
N.B. The total response is more than 88 because some respondents have ticked more than one reason.

[1] Schramm, Wilbur, Big Media Little Media: Tools and Technologies for Instruction.(London: Sage Publication, 1977)

smallest number of users (an average of less than 30%). The next least users' groups (average 31%-40% use) include subjects like management studies, chemistry and sociology. Physics comes next (average 41%-50% use) and the subjects where media are most often used are Social Work, Biology, Political Science and Psychology. This shows that in actual practice, the higher level of abstraction of subject, the smaller frequency of use of instructional media, supporting the hypothesis set earlier. The opinion of the lecturers, that "unfit for subject matter" is their chief reason for not using instructional media, also supports this point.

"No software available" is the second most popular reason (an average of 21% responses among the seven factor) (Table 9) for not using instructional media, except for the Opaque Projector, which requires no software at all. This factor is seen more significant among the users' group (Table 10). The average percentage of the users for this factor is 32% while "unfit for subject matter" only has 23%. It is obvious that not many ready-made software is available in the two institutions. From their opinion, the users are quite certain that they will use the media more frequently if more suitable softwares are available. As hypothesized earlier, the availability of software is positively related to the frequency of use of instructional media.

"Lack of technical support" (except for super 8 film, opaque projector and TV programme) (Table 9), is the third reason

given for not using modern media. For super 8 film and opaque projector, the third reason given for not using is "no hardware available" and in case of TV programme, a "lack of skill in producing relative software" is given as a reason. It is true (from the responses) that the opaque projector is not a common tool in both universities and attracts new respondents' attention. Super 8 films, too, are not commonly use because a great deal of the software available for films are for a number of reasons[2], in the 16mm format . However, for the more familiar tools like video tape, slides, overhead projectors where the production of software is comparatively simple (compared to TV production), the average lecturers find software production still a problem to them. From "other reasons given for not using instructional media" (Table 11), 9% of the respondents express that the use of these media require extra preparation time and 2% express that the foreign produced materials are not suitable for use in Hong Kong. In other words, lecturers are in need of supporting human resources to help in producing or making the necessary adjustments for software production as well as for actual use of the equipment. Lecturers can neither afford the time nor do they possess the expertise in the preparation work. Thus supporting human factor is important both in software preparation and in the technique of use. If this problem can be solved, there is definitely a tendency to use more frequently the

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[2] Quality is better and suitable for larger audience group.

new media. Therefore in the lecturers' opinions the availability of human resources is positively related to the frequency of use of instructional media.

"No hardware available" is not a determining factors in the opinion of lecturers in both universities. The highest percentage representation is 16% and the lowest 1% (Table 9). Both users and non-users tend to believe that they have sufficient hardware, and it is not the essential cause of their not using the media. Therefore, the earlier hypothesis that the availability of hardware is positively related to the frequency of use of instructional media is not supported in the case of the two universities in Hong Kong, as far as the opinions expressed by members of the sample in this respect are concerned.

"Having no knowledge about its existence" is comparatively significant in Opaque Projector only and "lack of skill in producing related software is comparatively important only in TV programme (Table 9). In general, the lecturers in both universities are quite familiar with these instructional media (Table 9) and "knowledge" is definitely not a resisting factor. Thus, the relevant information possessed by the lecturers is positively related to the frequency of use of instructional media, as hypothesized earlier, does not apply here.

The statement "the relevant processing skill of the lecturer is positively related to the frequency of use of instructional media" is also not supported by the findings of Table 10. From this Table, less than 10% of response is seen under this factor

for both users and non-users. Besides, since most lecturers express that lack of technical support is an essential factor for not using instructional media, they do not think that they should or could make software themselves at all.

There are almost as much response in "others" as the second most popular reason given for not using the media (no software available). This point, however, will be further discussed in the following chapter.

In Table 10, it is also found that a larger percentage of the total response comes from non-users (82%). They also form the largest percentage responding to each factor. (Now users in hardware as a factor is 86%, software as a factor has 69%, technical support has 79%, subject matter has 88% lack of knowledge has 96%, lack of skill has 81%.) This is to say that all the six factors listed have their roles in inhibiting the use of these media, especially in the initial decision stage of non-users.

From Table 10 it is also found that the users' and non-users' opinions on factors hindering their use change in accordance with the frequency of use. There is a difference in need between the actual users and the non-users. For the non-users, the highest percentage (38%) is found under "unfit for subject matter" while for the users, whether they are high users or low users, they share the opinion that the most important reason for inhibiting use is no software available (28%, 35% and 34%). Subject matter then becomes secondary. It is logical that as they become actual users, they begin to discover more direct problems in actual application.

CHAPTEP VII

DISCUSSION

Other Factors

A good number of respondents have indicated "other reasons" for not using instructional media (Table 11). From what they have written down in this "other" column, three major phenomina are seen. First, the traditional practice of chalkboard teaching is still indispensable. Eight percent of the respondent believe that the blackboard is quite sufficient and that there is no need of the new technique. Two percent see these new equipment as 'fad' only. Secondly, there is not enough supporting follow-up facilities after the introduction and provision of hardware. This includes supporting human resources as well as the appropriate software. Therefore, a number of lecturers (9%) complain that the use of instructional media requires extra time, that it is not convenient (6%), and troublesome, and that materials are out of date, or not suitable for their use. These problems, in fact, can be overcome if enough technicians and production expertise are provided to help preparing, up-dating or adjusting the materials required. Lastly, it is out of personal bias or misconception concerning the use of these media that inhibits the use of these media. Lecturers simply put down "I just don't like it" or "too luxourious", or "lecture go too fast (if media is used)". Although the percentage of this group is not great (1% to 2%) their mentality should not be ignored.

Table 11

Other Reasons Given For Not Using Instructional Media

Reasons given	Number of response	%
1. Requires extra time and effort	8	9
2. No need (the blackboard is sufficient)	7	8
3. Less convenient (than blackboard)	5	6
4. Material out of date	2	2
5. Troublesome	2	2
6. Lecture go too fast (if media is used)	1	1
7. Smells bad (white board)	1	1
8. Too luxurious, only fad	2	2
9. Expensive	1	1
10. Software not suitable for Hong Kong situation (foreign material, different accent)	2	2
11. Not flexible	2	2
12. I just don't like it	1	1
No response	54	61
Total	88	100

Source: responses from questionnaires.

Supporting Studies: Reasons For Using

Since the main emphasis of this research is on resisting factors, the study of the reasons for using serves only as a supplementary study to the main theme. However, it is still interesting to see how respondents response to different factors when asked positively.

From Table 12 it is found that in general the largest percentage of response is found under "make subject more interesting" (156 response). Almost equal to this is "explain complicated matter better" (155 response). This supports the previous opinion survey on "reasons for not using" where the suitability of subject matter is the first consideration of lecturers. However, a closer look under these reasons, reveals that the items with highest percentages of response under "explain complicated matter better" are the blackboard (32%), the white board (16%) and the overhead projector (41%). This implies that lecturers on the whole still favour the traditional pattern of chalkboard teaching (the nature and use of white board and overhead projector can be very similar to the blackboard).

The overhead projector (12%), 16mm film (14%) and video tape (11%) are only seen as capable of making subjects more interesting. For all other essential teaching objectives such as "cause better retention", "catch student's attention", and even in "save teacher's time" it is found that the blackboard, the white board or the overhead projector become the most popular

Table 12

REASONS FOR USING

		catch student's attention	save teacher's time	explain complicated matter better	make subject more interesting	cause better retention	because others use it	Other	total response
Black board	N	37	15	50	14	24	0	10	150
	%	25	10	33	9	16	0	7	100
	%	(34)	(18)	(32)	(9)	(33)	(0)	(13)	(24)
White Board	N	14	10	24	10	10	1	10	79
	%	18	13	30	13	13	1	13	100
	%	(13)	(12)	(16)	(6)	(14)	(50)	(18)	(12)
Overhead Projector	N	17	35	44	19	12	1	7	135
	%	13	26	33	14	9	1	5	100
	%	(15)	(41)	(28)	(12)	(17)	(50)	(13)	(21)
Slide Projector	N	9	4	13	31	7	0	4	68
	%	13	6	19	4	10	0	6	100
	%	(8)	(5)	(8)	(8)	(10)	(0)	(7)	(11)
Tape Slide Machine	N	2	2	4	13	3	0	3	27
	%	7	7	15	48	11	0	11	100
	%	(1)	(2)	(3)	(8)	(4)	(0)	(5)	(4)
Film: 16mm	N	8	7	10	22	4	0	4	55
	%	15	13	18	40	7	0	7	100
	%	(7)	(8)	(7)	(14)	(6)	(0)	(7)	(9)
Film: Super 8	N	4	2	4	13	2	0	3	28
	%	14	7	14	46	7	0	11	100
	%	(4)	(2)	(3)	(8)	(3)	(0)	(5)	(4)
Opaque Projector	N	5	3	2	4	2	0	5	21
	%	24	14	10	19	10	0	24	100
	%	(5)	(4)	(1)	(3)	(3)	(0)	(9)	(3)
Video Tape	N	10	5	3	17	6	0	5	46
	%	22	11	7	77	13	0	11	100
	%	(9)	(6)	(2)	(11)	(8)	(0)	(9)	(7)
TV Programme	N	4	2	1	13	2	0	5	27
	%	15	7	4	48	7	0	19	100
	%	(4)	(2)	(1)	(8)	(3)	(0)	(9)	(4)
TOTAL	N	110	85	155	156	72	2	56	636
	%	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

Source: responses from questionnaires.

N.B. The total response is more than 88 because some respondents have ticked more than one reason.

items. This indicates the importance of these aids in the minds of the lecturers and are quite indispensable at this stage, while other more sophisticated instructional media are quite optional and/or secondary. They are used more frequently only in subjects that requires more illustration for explanation. As discussed earlier in subject matter and frequency of use, modern instructional media are welcomed by lecturers teaching subjects such as Biology for better illustration purpose. Other lecturers only use them occassionally to excite or refresh the class. Viewing this situation, the road to "technology in education" in Hong Kong is still a long way to accomplish.

CHPATER VIII

CONCLUSION AND RECOMMENDATION

With the advancement of technological support to education, there has been changing concepts in "education technology". The The original "audio-visual aids" approach has gradually been replaced by a more systematic approach of "technology of education". It is hoped that through a modest redeployment of the total resources, the educational process can be increased both in effectiveness and efficiency, and that the technology and the teacher work for mutual benefit.

Since the teachers are the most essential intermediaries or catalysts between the available learning resources and the students, the successful integration of these new technologies into the education pattern largely depends on the teachers' attitude to these media. Therefore, many recent researches on resisting factors for innovation in education focus on the 'teacher' element in the process.

While a lot of teachers are still suspicious and/or apathetic to the use of the new instructional media in teaching, there are also examples of successful utilization of these electronic devices in education[1]. Recent developments in teaching/learning theories as well as in communication theories are quite certain about the potentials of modern instructional media in extending

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[1] Hortie, John A., Successful Examples of Instructional Technology in Higher Education, 1981. (Kansas State University)

the quality and quantity of education[2]. Attempts by policy-makers and educationalists to introduce these new technologies are found in many educational institutions in the Western World[3].

The introduction of the new instructional technology into the higher education in Hong Kong commenced in the early seventies when both Universities in Hong Kong had their Instructional Media Centres set up. In spite of their relatively slow development, they definitely pass the third revolution and are on the threshold of the fourth (from printing to the development of electronics in education), to fit Hong Kong into Sir Eric Ashly's four revolutions in education[4]. In Ivor K. Davies' words, the two Universities in Hong Kong have developed far beyond "Technology One". (The implementation of hardware)[5]

As pointed out by the National Organization for Educational Technology Proposal[6], in order to secure the "potential advantages" of the new technology, developments should be well co-ordinated.

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2 Please refer to Chapter II of this thesis.

3 Weinstock, Ruth, ed., Communication Technology in Higher Education, 22 Profiles (Washington D.C. Communications Press Inc., 1977)

4 The Fourth Revolution: Instructional Technology in Higher Education (a report and recommendations by The Carneigic Commission on Higher Education, McGraw-Hill Book Company, 1972)

5 Hartly, James and Davies, Ivor K. ed., Contributions to an Educational Technology, Vol. 2 (London: Kogan Page Limited, 1978)

6 Central Arrangements for Promoting Educational Technology in the United Kingdom. Report of the Working Party appointed by The Secretary of State for Education and Science (Department of Education and Science, 1972 London)

Hong Kong is still at the initial stage of incorporating electronic devices into the educational pattern, it is time for more researches made on the problems and needs that may arise from the changeover. Factors that may cause resistance to these changes should be found out and overcome first, before the relevant authorities decide the direction for further development. Although it is desirable that Hong Kong should catch up with the world's educational trend, it does not necessarily mean the copying of other nations' examples without modifications according to local circumstances. Therefore, through a survey method, and from the responses of the sample (composed of lectures from the two Universities in Hong Kong), the present research has attempted to assess the nature of instructional media use in higher education in Hong Kong.

By discovering the existing problems, it is hoped that the inhibiting factors can be minimized and that instructional media can serve the good purpose of furthering the educational development of Hong Kong.

From the findings of the present research, it is obvious that both Universities in Hong Kong are experiencing more or less the same problems and in the similar stage of development as far as modern instructional media are concerned. It has also been pointed out that some fine differences exist between the two institutions such as the availability of overhead projector or white boards in classrooms, but these differences do not change the fact that both universities are not too enthusiastic in

utilising new instructional media. It is true that both of them have set up centres for media resources, but the extent these centres are being made use of by the teaching staff seems to be quite insignificant. Faculty members in the two universities tend to resist the use of instructional technology. The blackboard, by far, is the most popular teaching aid used in classrooms. It has been shown in Table I that among the high users group , blackboard utilization occupies sixty percent of the ten items listed. The overhead projector and the white board take another thirty percent, while the other more sophisticated items figure little in the percentage-scale. For synchronized tape-slide presentation, films, video tapes, televisions, opaque projectors, over sixty-eight percent of the answers fall within the "never" or "no response" column in the frequency of use table. This shows that the traditional form of teaching aid (chalk board and the like) is still indispensable at this stage.

Unwillingness to use these modern media by teacher is seen as the chief reason for the sluggish development of media use. Another reason may be the universities' general policy of maintaining reasonably small classes as well as the status quo in teaching method. To many educators in Hong Kong, modern instructional media are useful only when classes are large. Their mentality is in line with "audio-visual aid" concept as defined by the National Education Council Report[7]. Because of these reasons,

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[7] Central Arrangements for Promoting Educational Technology in the United Kingdom. Report of the Working Party appointed by The Secretary of State for Education and Science (Department of Education and Science, 1972 London)

Hong Kong is very far from the "machine-dependent future" as envisaged by Robert Heinich[8].

The chief aim of the present study is to find out the reasons for the inertia which exists in the two universities when they attempt to introduce and develop modern instructional media. The focus is centred on the opinions expressed by the teachers sampled; as these represent the critical elements in the process of adoption and application of modern instructional media in teaching.

From the reasons given for not using the new technology, the availability of hardware is definitely not a problem. Lecturers from both universities feel that there is an adequate supply of equipment when needed. This implies that the economic and academic developments of the two universities have gone beyond the implementation of hardware stage.

"Unfit for subject matter" is a more significant factor inhibiting the use of instructional media as expressed by the lecturers. This can be interprated on two levels. First, the capability of the devices in matching the situations and style of teaching in Hong Kong is questioned by some lecturers. They also express that there is "no need" for these sophisticated devices and that they are "not convenient". According to them, the present condition in teaching is good enough without these technologies, and the implementation of them only adds troubles.

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[8] Heinick, Robert, Technology and the Management of Instruction, monograph no. 4 (Association for Educational Communications and Technology, 1976)

However, judging from the next most common resistance factor, "no software available", the probable reason why they say "unfit for subject matter" is because of the lack of appropriate course materials. The suitability of the devices to perform certain task depends completely on the existence of the proper software. Thus, the two most common resisting factors given are seen to be closely related.

Indeed, "practical application" is always a central ingredient in the initial decision stage of the teacher for "using" or "not-using" a new device. The use of nearly all technologies will require an investment of time and effort on the part of the teacher, if he is to use it in his classroom. Unless the teacher is thoroughly convinced that this is worthwhile for the students, he will not be motivated to spend time and/or effort in preparing for the use of these new technologies. This point is further supported by them who state the reasons why they use instructional media. The most obvious advantage seen by these teachers who use films, video-tape, tape-slide machines, TV programme in teaching is "making the subject more interesting", while the blackboard, the whiteboard and the overhead projector, to them, can "explain complicated matter better", "cause better retention" and "save teachers' time" (Table 12). Comparatively speaking, the blackboard, the white board and the overhead projector are more handy and more practically used, and, correspondently, have higher the frequency of use (Table 1).

On the whole, it seems that lecturers of the two universities in Hong Kong are still at the initial decision stage of adopting instructional media. Although they are quite aware of the existence of these new devices (only 5% of the users and 8% of the non-users put down 'no knowledge' about their existence), they are still suspicious of their functions. This also explains why other supporting factors (such as 'technical support available') appear less important. It is because unless lecturers become frequent users, otherwise they will not appreciate the need of such facilities.

Therefore, some follow-up work should be recommended after this initial stage of implementation of instructional media in the two universities in Hong Kong has been made. Attention should be paid to three main areas; they are: (1) facilities, (2) service, and (3) training.

(1) After the adequate supply of hardware, it is also important to ensure the adequate supply of supporting facilities. Technical aid is important only when the need of software production is acknowledged. Very often, teachers are in need of facilities to make resource material for themselves or to adapt to their own needs material that are supplied from other sources. The use of modern technical devices, too, require staff with special training or experience to operate and maintain them. Unless relevant facilities are provided for this follow-up work, the teachers will not have confidence in using new technologies.

(2) Resource personnel are also indispensable in promoting mutual adaptation by offering relevant, and practical advice on an "on-call" basis, and by meeting the immediate needs of teachers, as well as providing specialist services. Many teachers, especially at the initial stage of introducing modern instruction media are unfamiliar with the potentials and nature of these devices. At least one "expert" around the university campus, who has time, expertise and duty to assist other teachers. This will alleviate many problems from tightening up a connection or adjusting the colour of a television to lesson-planning in connection with the application of these devices.

Information service which offers latest news and information on techniques and resources, on software production, on development effort and on general use, is also essential to allow the teachers and administrators to remain currently informed in this rapid changing field. This service bureau should also provide information on publication of research and information papers, research work in progress, the full range of technique and resources, materials and courses currently available, materials and courses under development in the institution.

(3) Lastly, continuous in-service training is important to enable the teachers to realize the potentials of these technical supports in the classroom, and their use in many modes, so as to enable them to take to practice easily. Teachers should be given

ample opportunities to see how these aids are used, and examples of quality uses elsewhere in the world should also be displayed. In this way, the teacher may realize how these techniques may offer him the prospect of higher professionalism, the opportunity to use his own special talents and skills more fully, and the freedom from the drudgery of much present classroom activities.

Workshops and regular meetings, focussing on practical problems are strongly correlated with effective implementation and co-ordination. Peers are generally found the most effective counsellors when they come to advising on problems they are most experienced; they therefore are in a position to suggest remedies or modifications for use.

Nearly all technologies will require an investment of time and effort on the part of the teacher, if he is to use them in his classroom. Unless the teacher is thoroughly convinced that this is worthwhile for the students, he will not be motivated to spend much time and/or effort on preparation work for the use of modern technologies.

It is only with the teacher's appreciation of and capability to use these devices that instructional media can increase the effectiveness and efficiency of the educational process.

THE FIRST LETTER

THE CHINESE UNIVERSITY OF HONG KONG 香港中文大學

SHATIN • NT • HONG KONG • TEL. 12-633111 • CABLE ADDRESS : SINOVERSITY • 香港新界沙田・電話：一二・六三三一一一

新聞傳播系
Department of Journalism & Communication

Our Ref:

Your Ref:

TO WHOM IT MAY CONCERN

This is to certify that Miss Pang Cheung-chu, a second year post-graduate student of the Communication Division, Graduate School of this University, is conducting a survey in connection with her thesis on the use of instructional media at university level. Any assistance you can give to her will be deeply appreciated.

Sincerely yours,

Timothy Yu
Professor and Head

本校研究院傳播學部
碩士班二年級學生彭掌
珠女士現正搜集資料
就本港大學使用教學
媒介問題撰寫論文，敬
祈抽暇賜予協助為感。

此致

傳播學部
余兆熙 敬啟

八二、四、八

APPENDIX II

THE QUESTIONNAIRE

Instructional media has been quite commonly used in the western world. The present questionnaire is an attempt to find out the degree of use of these media in the Hong Kong situation.

It is only through your kind assistance that we can achieve this goal and your answers will be statistically analysed; so there is no need to put down your name.

1. Please tick one or more of the following you use to assist your teaching:

How often do you use:

	1 ALWAYS (100% of lectures)	2 VERY OFTEN (80%-99% of lectures)	3 OFTEN (60%-79% of lectures)	4 SOMETIMES (40%-59% of lectures)	5 SELDOM (20%-39% of lectures)	6 VERY SELDOM (1%-19% of lectures)	7 NEVER (0%)	
Blackboard								4
White board								5
Overhead Projector (and transparency)								6
Slide								7
Slide/Tape Synchronized (Ring-master)								8
Film 16 MM (sound/wothout sound)								9
Film: Super 8 (sound/without sound/ cartrige)								10
Opaque Projector								11
Video Tape playback (½/½ VHS or any format) (produces by outside services)								12
TV production(self-produced)								13

2. Please tick the reasons for not using:

	1 no hardware available	2 no software available	3 lack of technical support	4 unfit for subject matter	5 having no knowledge about its existence	6 lack of skill in producing related software	7 other	Please indicate the most significant reason	
Overhead Projector									14 20 70
Slide Projector									21 27 71
Tape Slide Machine									28 34 72
Film 16mm									35 41 73
Film Super 8									42 48 74
Opaque Projector									49 55 75
Video Tape									56 62 76
TV Programme									63 69 77

3. Please tick the reasons for using:

Given appropriate software with these media, I think it would

	1 Catch student's attention	2 Save teacher's time	3 Explain complicated matter better	4 Make subject more interesting	5 Cause better retention	6 because others use it	7 other	Please indicate the most significant reason	
Black Board									4 10 4
White Board									11 17 5
Overhead Projector									18 24 6
Slide Projector									25 31 7
Tape Slide Machine									32 38 8
Film 16mm									39 45 9
Film Super 8									46 52 10
Opaque Projector									53 59 11
Video Tape									60 66 12
TV Programme									67 73 13

4. Please tick:

1 a. How often do you think teaching equipment is available for your teaching? ____14

always _____ sometimes _____ never _____

b. For those who tick sometimes or never, do you think you will use more instructional media if they are always available? ____15

yes _____ no _____ not sure _____

2 a. To what extent do you think softwares (e.g. film, slide) are available for your teaching? ____16

adequate _____ inadequate _____ none _____

b. For those who tick inadequate or none, do you think you would use more instructional media if there were adequate software? ____17

yes _____ no _____ not sure _____

3 a. How often do you think can get help from media specialists in relation to Audio-visual services for your teaching programme? ____18

always _____ sometimes _____ never _____

b. For those who tick sometimes or never, do you think you will increase the use if better Audio-visual aids services are provided? ____19

yes _____ no _____ not sure _____

4. In general, do you consider yourself

_____ _____ ____20
user non-user

For those tick "user" please answer:

5. Apart from other reasons, is it true that your use of instructional media is because it explains better for your subject?

_____ _____ _____ ____21
yes no not sure

6. Apart from other reasons, is it true that your use of instructional media is because you are informed of them?

_____ _____ _____ ____22
yes no not sure

7. Apart from other reasons, is it true that your use of instructional media is because you are familiar with the operation of the equipment and/or the production of relevant teaching materail to use with the equipment?

_____ _____ _____ ____23
yes no not sure

For those who tick "non-user" please answer:

8. Apart from other reasons, is it true that your not using the instructional media is because it is unfit for the subject matter you teach?

_____ _____ _____ ____24
yes no not sure

9. Apart from other reasons, is it true that your not using the instructional media is due to the lack of information in this respect? (i.e. its existence and importance)

_____ _____ _____ ____25
yes no not sure

10. Apart from other reasons, is it true that your not using the instructional media is due to your lack of skill in this respect? (i.e. operation of equipment and/or the production of relevant teaching material to use)

_____ _____ _____ ____26
yes no not sure

5. Background Information:

1. Numbers of years you have been teaching at college level:

_____ 27

2. At present you are responsible for:

_____ 28
No. of classes

_____ 29
Size of class

3. Department:

_____ 30-31

4. Grade:

Senoir Lecturer/above ☐ 32

Lecturer/below ☐

5. Age:

20 - 30 ☐

30 - 40 ☐

40 - 50 ☐ 33

50 - 60 ☐

60 or above ☐

6. College: HKU

CUHK 34

HKP

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